

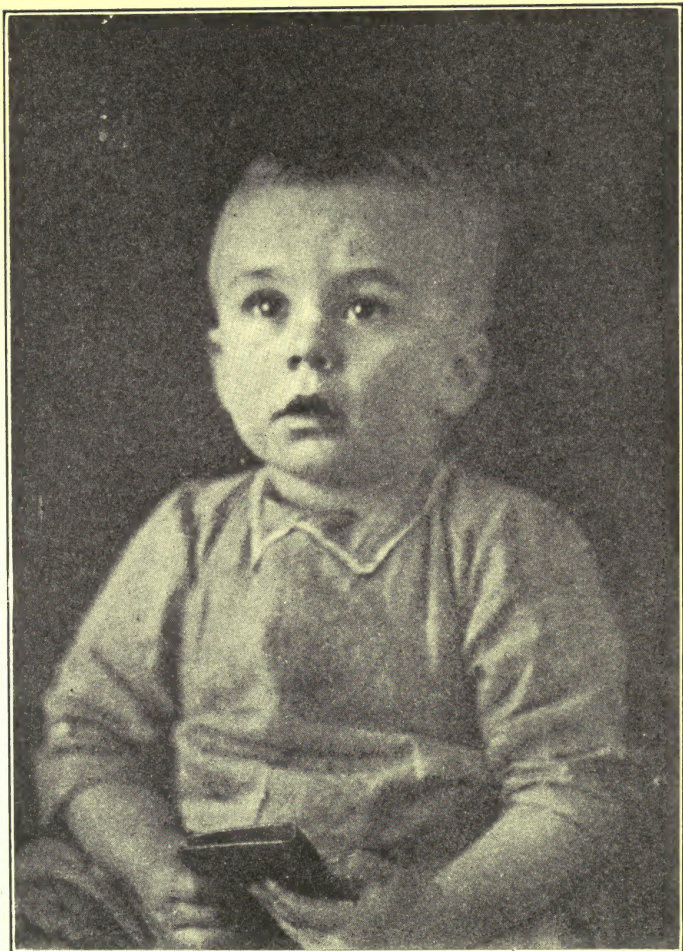
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Educational Psychology Monographs










PORTRAIT.

(Figure 19.) The expression of surprise (mouth open and lower jaw dropped) came as he looked up to investigate a curious noise he heard. (Age, twenty-three months.)

HOW I KEPT MY BABY WELL



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Educational Psychology Monographs

Including Experimental Pedagogy, Child Physiology
and Hygiene and Educational Statistics

Edited by Guy Montrose Whipple

No. 9

How I Kept My Baby Well

By

ANNA G. NOYES, B. Sc.



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24/8/20

Baltimore, U. S. A.
WARWICK & YORK, Inc.
1913

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TO JOHN DEWEY

whose plea for the extension of the methods of science to the commonplace things of life gave me courage to believe that a mother's own baby might be a fit subject for scientific investigation by even a baby's own mother.



EDITOR'S PREFACE.

The fact that the *Journal of Educational Psychology* has defined its scope to include the consideration of child psychology and hygiene justifies the inclusion in the allied series of *Educational Psychology Monographs* of the material set forth in the present volume.

Mrs. Noyes has, we believe, made a contribution of real interest to physicians and nurses, to mothers and fathers, and to students of childhood generally. The value of her work is twofold. On the one hand, it points the way to a method and type of observation that any intelligent mother can undertake with profit to herself and to others, and in so far disproves the contention of some critics of the child-study movement that observations of young children by their own mothers can never yield data of real value; on the other hand, it furnishes generalizations in the shape of principles or rules governing feeding, clothing, and the general control of infant development that will be of direct utility to those who, like the author, face that vital problem—how to keep the baby well. Mrs. Noyes has displayed commendable caution in drawing these generalizations. It is not asserted that what applied to her own baby will

apply invariably to any other baby, but only that it undoubtedly will apply to many babies, and that her method of attacking the problem is, at any rate, a method that other mothers may follow to advantage when confronted with the same situation.

The conservation of human life by the reduction of infant mortality is a noble undertaking. The editor joins with the author in the hope that this little contribution may in some measure further that undertaking.

G. M. W.

CONTENTS

	PAGE.
Introduction	7
CHAPTER I. THE PROBLEM	13
CHAPTER II. NINE UNUSUAL MONTHS IN DETAIL, SIXTEEN OTHER MONTHS BRIEFLY SUMMARIZED.	
<i>The Nine Unusual Months.</i>	<i>The Sixteen Other Months.</i>
1. The First Month, (February)	21
2. The Problem of Regurgitation, Second Month (March)	25
3. Third Month (April)	30
4. Fourth Month (May)	32
5. Fifth Month (June)	33
6. The Problem of Overfeeding, Sixth Month (July)	36
7. A Perfect Month, Seventh Month (August)	43
8. Eighth Month (September)	49
9. Weaning Begun, Ninth Month (October)	51
10. Weaning Completed, and a Cold, Tenth Month (November)	59
11. Eleventh Month (December)	68
12. Twelfth Month (January)	69
13. Thirteenth Month (February)	72
14. Fourteenth Month (March)	74
15. Fifteenth Month (April)	75
16. Sixteenth Month (May)	75
17. Seventeenth Month (June)	75
18. Eighteenth Month (July)	78
19. Nineteenth Month (August)	79
20. Twentieth Month (September)	79

21. A Perfect Month,	PAGE.
Twenty-first Month (October).....	86
22. Twenty-second Month (November) ..	93
23. Twenty-third Month (December)...	93
24. Teething.	
Twenty-fourth Month (January).....	95
25. The Last Month.	
Twenty-fifth Month (February).....	107

CHAPTER III. SUMMARIES.

1. <i>Number of meals a day</i>	115
2. <i>Intervals</i>	118
3. <i>Diet</i>	120
(A). Length of time nursing.....	120
(B). Food.	
a. Quantity	120
b. Composition	121
(C). Water. Orange juice. Prune juice.....	129
(D). Medication.....	130
4. (1) <i>Regurgitation and</i> (2) <i>vomiting</i>	130
5. <i>Sleep</i>	130
6. <i>Feces</i>	131
(A). Frequency	133
(B). Character	134
(C). Causes of irregularities.....	138
(D). Remedies.....	138
7. <i>Skin</i>	132
(A). Regular treatment.....	142
(B). Evidences of trouble.....	143
(C). Special treatment	143
8. <i>Cold</i>	143
(A). Frequency	147
(B). Treatment. a. General. b. Local.....	149
9. <i>Behavior</i>	149
10. <i>Crying</i>	151
(A). Causes	151
(B). Frequency	152
11. <i>Weight and other measurements</i>	152
Length, in inches, of	
Body	153
Foot	153

	PAGE.
Breadth,	
Fronto-occipital, } of Head, in inches.....	153
Occipito mental, }	
Breadth, in inches, of	
Shoulders	153
Chest	153
Ninth rib	153
Hips	153
Depth, in inches, of	
Chest	153
Abdomen	153
Circumferential measurements, in centimeters, of	
Head	153
Neck	153
Chest	153
Ninth rib	153
Waist, and	153
Hips	153
12. <i>Physical achievements</i>	155
13. <i>Teething</i>	160
14. <i>Remarks.</i>	
(A). Vocabulary of motions and words.....	161
(B). Clothing	169
(C). Exercise	177
(D). Sucking the thumb.....	177
(E). Heritage	179
CHAPTER IV. A FINAL WORD.....	181

INTRODUCTION.

Let me say at the outset that I am fully aware that this is a record of but one baby, and that, of course, no sweeping generalizations as to baby culture can be made from this one case. Yet many have felt it their duty to warn me that I cannot write a book on how to bring up babies because I have had "good luck," as they say, with one.

But although one case does not permit me to generalize, it does allow me to be suspicious. And one thing about which I am suspicious is that tables of averages, whether of food or weight or growth, are likely to be misleading guides to a mother in caring for her one special case, because the baby is not labeled at the outset as to which side of the average he will fall. And to try to feed a baby up or down to an average diet is as absurd as to try to make any one horse pull up or down to the efficiency of the average horse. Doctors disregard averages in prescribing for a particular case, and they seriously intend that mothers should. The one case under consideration is the one which the doctor or the mother studies. If too much importance is attached to averages, points in the condition of the baby in question are likely to be overlooked. And the mother's problem is to find out just what are the most important

facts to be kept in mind in diagnosing her particular case.

Now, there is one thing that every doctor and nurse and mother with whom I have had opportunity to discuss this matter admits at once, and that is that *what will keep a baby well is the treatment for that baby*. Could anything be plainer than that? Our grandmothers knew it and practiced it before tables of averages were so much as dreamed of.

And how is one to know when a baby is well? Any unprejudiced, normal person could, after a few moments for reflection, sum up the evidences of health in a baby: namely, pink cheeks; a clean, red tongue; soft, smooth skin, unbroken by pimples or roughness; long, peaceful naps; freedom from colds; agility of movement; the eye sparkling and the cornea a blue white; a keen and regular appetite; all food thoroughly digested (as shown by a smooth and yellow feces); steady growth, and a happy, contented disposition. All these are readily admitted to be some of the evidences of good health in a baby.

If these signs spell health, then the disappearance of them signifies that health is in danger. If cheeks turn pale and the clear blue-white of the eye becomes yellowish, if the skin grows rough or blotched, and if bodily movements become listless, if the food is thrown up and the excreta are foul, and if the weight is not increasing and the baby is irritable, all these changes must be noted, not necessarily with alarm, but frankly and to the full extent of their importance.

And once the habit is established of noticing and admitting these little lapses, then must follow the search for the mischief-maker.

I believe the investigation should begin with the diet. If that is rightly managed, the cause of the trouble can usually be located at once and removed. And that is what I studied to do. If trouble so much as peeped out, I was after the cause of it. I eliminated three possible causes of disturbance in the air and water and clothing, by seeing to it that the air was fresh and stirring, and that the water had been boiled, cooled and warmed again before drinking, and that the clothing was comfortable and hygienic. In this way the mischief-maker could readily be cornered in the only thing (barring accidents and contagious diseases) that remained—the food.

Little by little, I found where to look for evidences of wrong feeding. To begin with, I became very suspicious that throwing up was a sign of overfeeding. "Everybody" says that "all babies vomit." But why do they? I wondered. And so as long as my baby continued to regurgitate, with my eye on the scales, watching his weight, I kept cutting down the quantity of food and increasing the intervals, until at one time he was nursing one-sixth the *time* which Holt prescribes. But as the scales continued to rise and the baby kept well, I knew I was on the right track.

But sometimes I found the stomach would pass food which the intestines could not handle, and so I found another danger signal in the excreta. When I had learned by constant observation and consultation with a doctor what good and bad excreta were, they proved to be the most reliable evidences that the diet was right or wrong. And I soon came to feel that *in the intestines was to be found a reliable guide in*

maintaining the baby's health. Irregularities in the excreta demanded a change in the diet. Frequently the change in diet came soon enough and was near enough right to restore the evidences of health, but sometimes it was too late, and other symptoms of trouble would appear in a pimple or a white tongue, pale cheeks or a cold. After which, the proper salve or a hot bath had to be given to supplement the work of the delayed change in the diet.

In general, if the digestive tract had been given no food beyond its capacity, and if the baby were gaining in weight and otherwise well and happy, then I made no changes in the diet. Or if, immediately upon giving evidence that too difficult or too big a task had been expected of the intestines, a rest from food followed, or a change was made to what I had found out the intestines could handle successfully; then, barring accidents, no further complications, fevers, sores, crossnesses, and so on, had a chance to make headway. But failure to reckon with the first evidences of indigestion meant that other evidences (pimples, a cold, or even a fever) turned up later. My baby never got so far as colic, nor has he had any contagious disease.

I spared myself no pains in measuring food, as I found that an excess of even a very small amount of milk or cream or barley or oatmeal would upset the digestion.

Teething, the dread of all mothers, proved in this case, too, to be a disturbing factor, and often my best laid plans would "gang agley" apparently for no other reason than that digestive processes were upset by teething pains. At such times all I could do

was to mollify the pain with tannic acid and be especially careful about diet. And I conscientiously avoided making teething the scapegoat for all baby troubles.

In a word, this was my clue—to keep the baby well so that he could not get sick.

And what comment do the doctors make upon this plan of caring for a baby? One doctor, who ought to know what he is talking about, said to me: “Well, if all mothers cared for their babies in this way, where should we come in?”

This I should call the *common sense way of caring for a baby*, and it is, of course, the way in which many mothers have already brought up their babies. But I cannot find that any one of them has stated the problem consciously, or at least, stated it for publication, or has any data to offer, in the shape of records, as to how the plan worked, even in one case.

And this is all I claim to have done. *I have a complete record of one baby who was kept well for two years by not being allowed to get sick.*

The thing to do next is to follow this record with the records of, say, fifty babies. In addition to the charts of weight, of growth and of dietaries, which this further study would evolve, charts should be made to show the characteristics of the normal and of the abnormal feces, and the probable causes of the disturbances in the latter. I believe that these latter charts, in the hands of an intelligent mother, would be a greater help to her in checking up a dietary than charts of average amounts of food, of average growth and average development, however valuable these may be. For the evidences of health are the

same for all babies, but the amount of food any individual baby can handle, the weight any individual baby can add and the rapidity with which any individual baby can grow may, and do, vary considerably.

In other words, a diet checked up by what are known to be constant elements is more likely to come out right than when checked up by varying ones. Or, put in another way, the changing conditions of a baby's body are the best guides to his diet. With the diet properly regulated, increasing weight and growth and strength will follow as a matter of course. To postpone attention to a baby's diet until he has the colic or begins to lose weight may be to wait too long. There are earlier signals of trouble than loss of weight or cessation of growth. As Dr. Holt says, again and again, "*conditions present are the best guide.*"

My own conclusion is that the keynote in maintaining a baby's health, will be found (after fresh air, pure water and hygienic clothing have been secured) in *keeping the whole digestive tract in perfect order.*

At any rate, it will do no harm for a mother to try to keep her baby well.

CHAPTER I.

THE PROBLEM.

To begin with, like almost every other mother with her first baby, I was a novice at baby culture. There is no school which a prospective mother may attend where she may try her hand at baby-raising under expert supervision. Were she "going in" for chickens or pigs, there would be schools, universities and government pamphlets galore at her service, but when she would raise only a human baby, universities and government bureaus are silent.*

I cannot recall any particular instruction given me during my academic life that so much as intimated that the problem of baby-raising existed in the world. But I had learned, though late in my college career, that there was such a thing as inductive thinking, and armed with the latter power, I was prepared to attack the former problem.

I had little information on hand as to the facts in my particular problem, but I did know how to look it squarely in the face, as it were, and I never hesitated, when I found myself confronted with questions that demanded knowledge which I did not have, to go to someone I thought ought to have it and ask for it.

*Since this paragraph was written, and before the book was published, The School of Mothercraft was established in New York City.

Nor did I grasp the whole of the problem during the first hour or day or week, nor can I remember just when I clearly stated the problem to myself, but it was about the sixth or seventh week that things began shaping themselves systematically in my mind.

There were several contributing factors tending to bring this about. For instance, Dr. Holt's *Care and Feeding of Children* I kept at my right hand; the nurses and physicians at the hospital were patient and considerate with my incessant questioning; Professor Chittenden of Yale answered a query; Dr. von Someren of Venice, through Mrs. von Someren, confirmed a suspicion; two friends who were physicians assured me I was on the right track, and even a common-sense person like my mother had to admit that I could not go far wrong in continuing as I had begun. And so, little by little, I found I was getting the whole problem stated. And, though I soon saw that in many details there were likely to arise any number of complications, yet, putting it in a word, the problem finally resolved itself thus: *How can I maintain my baby in health?*

By the seventh week baby-culture, merely as a problem, had become so interesting that I began keeping records, at first merely with the idea of using them for reference in this one case, but later because I hoped they might throw light on the whole problem of caring for a baby. As new developments followed, other items had to be noted, so that, the items that now seem to me to be necessary for consideration in planning and recording a baby's condition, diet and treatment, together with the abbreviations which I have used, are the following:

1. *Age*, in years (Y), months (M), weeks (W) and days (D).
2. *Intervals between meals*, in hours and fractions of an hour.
3. *Diet*.
 - (1). Length of time nursing, in minutes.
 - (2). Food.
 - a. Quantity.
 - b. Composition.
 - (3). Water, orange juice, prune juice, in tablespoonfuls (tbs.), later in ounces (oz.).
 - (4). Medication.
4.
 - (1). *Regurgitation* (food which has not yet been chemically altered in the stomach thrown up very soon after eating), in tbs.
 - (2). *Vomiting* (food thrown up later which has been made acid in the stomach), in tbs.
5. *Sleep*, length of time, in hours and fractions of an hour.
6. *Feces*.
 - (1). Time.
 - (2). Character:—smooth (S); curdled (C); yellow (Y); green (G); yellowish-green (YG); greenish-yellow (GY); loose (L); constipated (Co.). The abbreviations S., C., Y. and G. were printed large or small, according as much or little had to be designated. For instance, if the feces were only slightly curdled, a small "c" was used, if badly curdled, a large "C," and so on. To indicate when the feces was deposited in a chamber, a ring was drawn around the letters, *e. g.*, SY (with ring around) means that the feces was smooth and yellow and was deposited in a chamber.
 - (3). Causes of irregularities.
 - (4). Remedies.
7. *Condition of skin*:—rash (R); pimple (P); other irregularities. Medication.
8. *Cold*.
 - (1). Length of time.
 - (2). Treatment.
9. *Behavior*:—excellent (1); good (2); restless (3); cross (4).
10. *Crying*.
 - (1). Cause.
 - (2). Time, in minutes.
11. *Weight and other measurements*.
12. *Physical achievements*.
13. *Teething*.
14. *General remarks*.

I recorded *hiccoughs*, but I found that they so contradicted other evidences of good and bad digestion that they furnished me no guide in prescribing his diet. He hiccoughed when he was so full that he was regurgitating, and also when he had eaten little, both before meals and after meals, on full stomachs and empty ones, so I never did ascertain the conditions that were essential in hiccoughing. As a matter of fact, the immediate cause is, I believe, not known precisely. I have not included this record in the charts, as it has not influenced the baby's treatment. He had no long attacks of hiccoughs. Water or a few grains of sugar would sometimes stop them when they did occur, or they would cease of themselves.

Only occasionally did I notice that his *tongue* was whitish, but I have kept no record of its appearance from day to day, though I know it is a reliable index of intestinal conditions.

And only on two occasions when he had a fever did I note the *temperature*.

So at the beginning of the seventh week I prepared sheets as shown below, on which I recorded all those matters that related to his physical condition and treatment and that I felt were significant for daily guidance:

March 28, 1908.

Page 1.

Age.	A. M.	Time nursing begins.	Intervals between meals.	Time at breast.	Time feeding.	Regurgitation.	Coughs.		Vomiting.	Condition of skin.		Cold.	Feces.	Behavior.	Time.	Character.	Crying.	Weight.	Remarks.
							Hot	Water.		Slight	Rash.								
7 W. 3 D.	7	A. M.		10	5	1 Tbs.			0			0	0	1	3	1	0	12 lbs.
	10:34		3½	9	3½	½ Tbs.			0			0	0	1	2½	2	0	
		P. M.																	
	1:55		3½	5	2½	½ Tbs.			0			0	Y	1	2¼	2/1	0	
	4:20		2:25	5	2½	0		0	0			0	0	1	1¼	1	0	
A. M.	9:10		4:50	5	2½	0		0	0			0	0	1	3½	1	0	
	12:30		3:20	5	2½	0		0	0			0	0	1	3	1	0	
	4:10		3:40	5½	3	½ Tbs.		0	0			0	0	1	3½	1	0	

Copied from part of the sheet on which the daily records were noted.

From these record sheets the charts were later made out. Other items were added to these sheets from time to time as other things had to be recorded, as when artificial food was given, or orange juice, or water, etc.

A word concerning the accuracy of the data on the charts:

The length of time spent at the breast I noted by the watch. I began letting him rest every alternate 15 seconds while nursing, but I soon found I wanted my eyes for something else, so I counted 5, 10 or 15, depending upon his hunger or indifference, over and over again, and generally, by the way, set the counts to music, or allowed him to nurse and rest at alternating rhythmic measures.

The amounts regurgitated and vomited I could not measure because they were deposited on absorbent materials, so I had to estimate them as accurately as possible. The number of times vomited or regurgitated is, of course, exact, as I was with him practically all of the time and noted each emission.

The fact that I was working to correct the diet by the feces led me to note their frequency, consistency and color very conscientiously.

I found no simple way of noting the various skin troubles, but I have recorded every one that I noted, and as I was continually searching the skin for evidence of trouble, I believe I saw every pimple, patch of roughness or other irregularity that occurred.

The record of the baby's behavior (1, 2, 3 or 4) is particularly likely to be vitiated by personal prejudice. So knowing what a fond mother's heart may incline her to say of even a very cross baby (the mis-

takes are not made the other way), I hit upon the plan of checking the behavior record by noting the frequency and duration of every spell of crying. There is a record for every whimper, though I did not always note duration of crying by the watch; generally I estimated it, and I tried to estimate neither too liberally nor too sparingly.

The data for the charts showing the growth were taken by Dr. William McCastline of Teachers College, Columbia University.

Not much of the data has been verified or is verifiable by recourse to other observers than the baby's parents. Two doctors, Dr. McCastline and Dr. William E. Caldwell of New York University (the latter of whom had the case at the Manhattan Maternity Hospital), have been consulted from time to time and have kept in touch with the baby. Dr. McCastline has seen him once a month since he was six months old to take his measurements and give advice for the next month's treatment. Dr. Caldwell was called in twice, once when the baby had a slight fever and again when he had a faint rash; but, aside from that, has seen him about every two months. These two physicians can verify what is verifiable in the charts and records. The accompanying photographs* are also contributions as verification.

The data in this book represent, therefore, a faithful record of the physical development of a healthy baby.

*For the numerous photographs throughout the book, credit is to be given to my husband, Mr. William Noyes. They are the gleanings of a much larger number that were taken, and of themselves represent a work of considerable thought and infinite patience.



CHAPTER II.

NINE TYPICAL MONTHS IN DETAIL.

The charts and complete records for the 25 months were kept and prepared for publication, but as I found history had repeated itself so frequently during this period, I believed the essentials in the case could best be gleaned from a complete history of two perfect months and of those other months in which the typical problems were most difficult to handle, with the remaining months treated summarily.

With this idea in mind, I have selected the following nine months for complete presentation: the first and the last months mark the beginning and the end of the study; then two of the most perfect months, the seventh and twenty-first, the one before and the other after weaning; and a group of five months, of which each contained a particular problem, as follows: the second month, the problem of regurgitation, the sixth month, of overfeeding, the ninth and tenth months, of weaning and a cold, and the twenty-fourth month, that of teething.

The conclusions in Chapter III are, however, drawn from the data of all 25 months.

1st Month

Age	13 D.	14 D.	15 D.	16 D.	17 D.	Averages
Time nursing begins						9.2 Meals pr. day
Interval between nursings (Hours)						Long Int 6 hrs. Short Int 2 hrs.
Time nursing (Minutes)						11.8 Minutes nursing
Regurgitation (Tbs.)						11 Times, av. 1.4 Tbs.
Asleep during nursing period fell asleep after nursing						
Feces.						2.6 Feces pr. day

Chart I. A record of a few items noted at the hospital.

1. *From the Thirteenth to the Seventeenth Days.*
(February.) (See Chart I.)

While at the hospital I made a few notes (from thirteenth to seventeenth days), and these, together with some of the record compiled there by the nurses and doctors, give a clue to the feeding and conduct of all the first days and make a basis of comparison for the later weeks.

At the hospital I saw the baby during the nursing period only, and hence the record (see Chart I, p. 22) is necessarily incomplete, though correct as far as it goes. For instance, in the matter of regurgitation, what is recorded is only what I saw while the baby was with me. I made no record of what happened while he was away and none was available later when I asked for it, though the general impression of the attending physician, Dr. W. E. Caldwell, is that he regurgitated or vomited very little. Nor do I know how much he slept. I noted only his falling asleep when brought to me. (See chart.)

As there were no records at the hospital of disturbances other than two curdled greenish-yellow feces on the seventeenth day and a slight cold in the head on the same day, the conclusion is that all else was normal and well. The weights and measurements taken there are recorded on their proper charts.

But my skepticism as to the amount of food a baby should be allowed began there at the hospital and was encouraged by Dr. Caldwell and the head nurse, Miss Coucher, and they permitted me to use my own judgment as to the length of time I should nurse the

baby. The hospital regulation was 20 minutes at the breast, 10 times a day, at intervals of two hours, excepting one long interval of six hours, from 10.30 P. M. to 4.30 A. M. The interval was, of course, a matter not to be interfered with at the hospital, but the amount could be, and it was determined by the baby's inclination. The result was that it averaged in those five days about 12 instead of 20 minutes.* Even with that reduction, he did regurgitate, though the amount averaged less than half a tablespoonful for the time he was with me. At one time he regurgitated four times during the one nursing, going back to nurse each time, but finally discontinuing of his own accord. (See Chart I, fourteenth day.)

*In noting comparisons, I have not forgotten that the milk flows from the breast more freely at the beginning than at the end of a nursing period, which would mean that the time spent and the quantity of milk secured do not keep up an equal ratio throughout a period. In other words, a given time spent in the beginning secures more milk than an equal amount of time spent at the end. So when the difference in time is stated the difference in amount is not so great as it at first appears. Furthermore, I am told that the rapidity with which milk flows varies greatly among women. Mine came freely, spurting out at the beginning of a nursing period in jets, like water from a sprinkler. After a while, it would ooze out in drops. Whereas with some women the milk flows so slowly that the baby often tires of the attempt and falls asleep before getting enough milk. It would seem as if this baby secured a generous supply in a short time. This makes the difference in time misleading as to quantity. However, this was the only way I had to record the amount, and it seems to be the customary way of considering it, and it is fairly accurate for purposes of comparison in this case, (weighing the baby before and after nursing would give an accurate measure of the quantity taken). An error would be made, however, if quantities were computed in direct ratio to these intervals of time. For instance, if I fed my baby for ten minutes where Holt advised twenty minutes, it would not follow that I was feeding my baby half the *amount* Holt prescribed.

2. *From Seven Weeks Three Days Through Eight Weeks Three Days. (March.)* (See Chart II.)

After coming home from the hospital I assumed full charge of the baby. I was only too conscious of my ignorance on the subject, but I faced the problem devotedly, conscientiously and with docility.

One of the first perplexities was the problem of regurgitation. Although I was feeding my baby much less than the accepted standard, he continued to regurgitate. Now, my common sense told me that this was evidence that he was getting too much food. Moreover, Holt said that if a baby regurgitated it was evidence of overfeeding, and advised that the amount of food be reduced at each meal, and the interval between meals lengthened. But I had been doing this, and to such an extent that I feared the baby was not getting enough. By the seventh week he was having about seven feedings a day, of about four minutes each, whereas Holt advises through the seventh week eight feedings a day of not more than 20 minutes. Also, in the opinion of almost all the nurses, doctors and mothers with whom I talked, little importance was to be attached to a baby's regurgitations. I was even told that these were an evidence of health! On the other hand, the dangers of overfeeding have recently been made so clear by modern dieticians, that I was prepared to take any step that would keep the baby from that pitfall.

But as the proof of the reeding must always be found in the one fed, regardless, I believe, of any tables that have as yet been compiled, and as my baby was gaining in weight, was sleeping well and

2d Month-

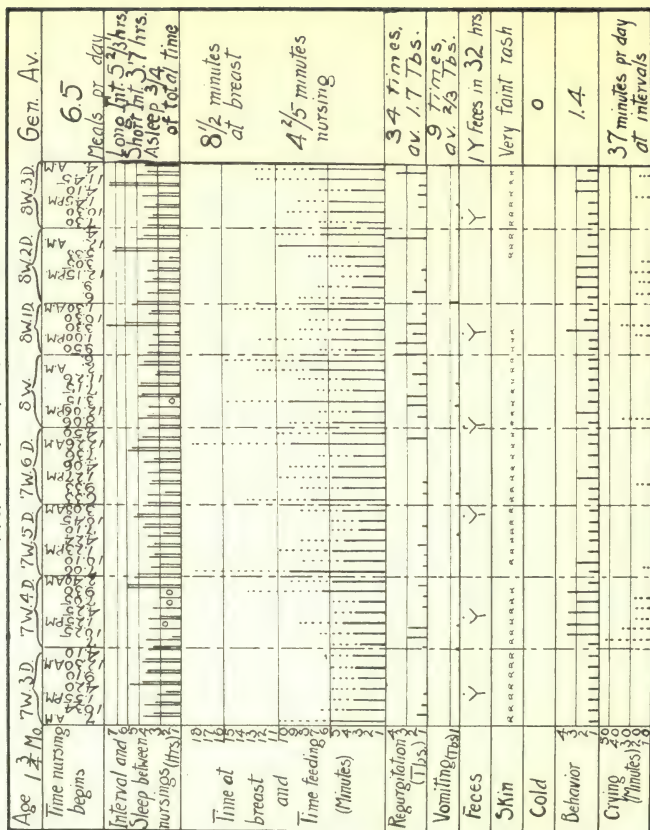


Chart II. Note the long naps (line at right of interval line) and general regularity of living.

was happy, these were sufficient proof that his diet could not be far wrong. So, on the whole, I was convinced that I should try to keep regurgitation down to the lowest possible point, or even try to eliminate it altogether, provided, always, that his general vitality did not thereby become lowered.

I believe I have never spent more thought over any matter that has come up to me for solution, than I did over this apparently simple one of how much to feed this baby during these first weeks. For, as I said before, I felt that the controlling factor in his health lay in keeping all his digestive operations in perfect condition and under my control, and as I had found no specific amount or time set down as an absolute guide, I was forced to weigh advice and general averages, on the one hand, with "conditions present," as Holt says, on the other, and then to decide what would be best for this particular case.

The result was that during the week before he was two months old (seven weeks three days to eight weeks three days), which was the time during which the first record was kept, I noted the following:

I. BRIEF SUMMARY OF THE MONTH. The baby smiled, and even laughed to us, and, aside from a slight rash, seemed perfectly well, though he was eating, according to duration of nursing, only one-sixth as much as Holt prescribes.

II. DETAILS. (See Chart II.)

1. *Number of meals a day.* He was nursing an average of six and one-half times a day (Holt advises eight).

2. *Intervals between meals.* The long interval (five and two-thirds hours) fell short one-third an

hour of the hospital regulation, while the short interval (three and three-quarters hours) increased one and three-quarters hours over the hospital time of the first weeks. I found it worked fairly well to let his inclination select the long interval rather than to try to insist upon its occurrence between certain hours, as 10 A. M. and 4 P. M., for instance. While keeping in mind what were the most convenient hours for me to nurse him, I was guided as well by his condition of hunger or sleepiness. I did not wake him to feed him, nor, if he seemed hungry after waking, did I make him wait until a certain time.

3. *Diet. (Length of time nursing.)* The average length of time actually nursing was four and two-fifths minutes, though he spent an average of eight and one-half minutes at the breast. To take the precaution of not letting him eat too fast, I counted 15 over and over, letting him nurse during one count and rest during the next, etc., so although he was at the breast 10 minutes, for instance, he was actually nursing only five minutes of that time. The chart shows a test made on the eighth week, second day, at which time he was allowed to nurse for 10 minutes without resting. After this feeding he regurgitated four tablespoonfuls, the most thrown up at one time that week.*

4. *Regurgitation and Vomiting.* He regurgitated 34 times, an average of one and three-quarters tbs. (in all, 58 tbs.), and vomited nine times, an average

*But the experiment, however, is of little value, since two factors instead of one were experimented with. I not only increased the quantity, but let him nurse without resting. Had I done either one alone, the test would have been more significant.

of two-thirds tbs. (in all, six tbs.), and I still wonder if it would have been possible to have eliminated even that amount.

5. *Sleep*. He was sleeping soundly three-quarters of the total time. The line at the right of the interval line on the chart indicates the length of time asleep during that interval.

6. *Feces*. The feces were without exception yellow, and, I think, smooth (though I did not begin to record the latter fact until the ninth week), and the interval between the feces averaged 32 hours.

7. *Skin*. A slight rash, lasting most of this week, was the only disorder noted in the skin.

8. *Cold*. There was no sign of a cold, and he was sleeping out-of-doors most of the time.

9. *Behavior*. His behavior (1.4) averaged about half-way between excellent and good, inclining toward excellent.

10. *Crying*. He cried at intervals an average of about six minutes a day.

11. *Weight*. He weighed 12 pounds, which was one and one-half pounds heavier than the Holt average.

12. *Physical achievements*. I was quite satisfied as to his strength, for he held up his head, as shown in the photograph (p. 176, Plate I, No. 2), from the fourth week, and the Holt babies are not supposed to accomplish that feat until the fourth month, though they often do, he says, during the third month.

3d Month

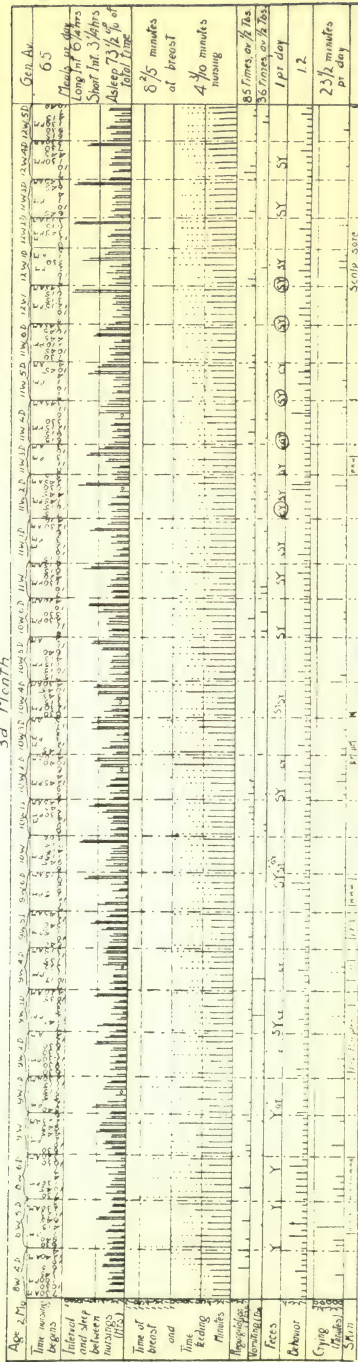


Chart III. Note continued regularity, and the long night interval dipping into the pattern (see on line "Interval and Sleep" last 4 nights). Notice, too, how few times he missed a nap after a meal (indicated by the tiny circles, same line).



Fig. 1. He liked to be held upside down. (Age, four months.)

[illegible]

Chart IV. A month of practically uninterrupted regularity. Note for how short a time he was nursing (four minutes). Turn to weight chart (p. 14, Chart XXXII) and note continued increase in weight ($1\frac{1}{2}$ pounds). He was also sitting up alone.

3. *Third Month. (April.)* (See Chart III.)

BRIEF SUMMARY OF THE MONTH. The treatment of the preceding month was continued. The baby was well, even exuberant. He frequently laughed aloud to us, and had outstripped by three pounds the Holt average for weight.

4. *Fourth Month. (May.)* (See Chart IV.)

BRIEF SUMMARY OF THE MONTH. This fourth month was a phenomenal one. He was eating less frequently and for a shorter time, while gaining steadily in weight and strength. By the fifteenth week he sat up alone the first time for about two minutes (Holt's time for this is about the seventh or eighth month). He was also reaching out to handle things, and could hang suspended from his hands, and enjoyed being held upside down. (See Fig. 1.)

5. *Fifth Month. (June.)* (See Chart V and Fig. 2.)

BRIEF SUMMARY OF THE MONTH. Though eating less, he regurgitated more, his flesh gave evidence of slight trouble, and the feces were not so good, all of which may be accounted for by the excessive amount of olive oil I had eaten. At any rate, upon my discontinuing the use of it, these troubles disappeared. He was greeting us with a smile (see Fig. 3) and gurgle, and trying to pull himself up by any stick or finger within reach, and frequently was succeeding. He exercised on the horizontal bar (a broom handle) fastened in his "gymnasium" (bassinet).



Fig. 2. His first portrait. (Age, four and a quarter months.)

6. *Sixth Month. (July.)* (See Chart VI and Fig. 4.)*The Problem of Overfeeding.*

I. BRIEF SUMMARY OF THE MONTH. This month records the first disturbance that gave us any anxiety. The trouble started evidently when my milk began running less vigorously, and lasted for about one and one-half weeks (twenty-second week, second day, to twenty-third week, fifth day). For the first six days he was restless, more wakeful than usual, and seemed to have difficulty in getting sufficient food. On the twenty-third week, third day, in order to stimulate the flow of milk, following the doctor's directions, I began to eat cornmeal porridge, three times a day, if possible, in addition to the other regular food, and to drink plenty of liquids. I did not note when I began these practices, but from one cause or another, the milk began flowing in sufficient quantity, and before I realized it the baby was obviously overfed. I found this out one evening when he was restless, and I kept trying again and again to nurse him. I thought he kept turning from the breast because he could get nothing, whereas it must have been because he had had too much. Finally, after we had spent a night of little sleeping and much anxiety, and hoping that the fresh air would put him to sleep, I took him to the roof of our apartment. It was about 4 o'clock and just light enough so I could see him clearly, and then I realized why he had been so restless. His face was swollen, particularly about the eyes, and there was a faint rash over the stomach, which were all the evidences I wanted to prove that he had been overfed. However, we both slept for about three hours,



Fig. 3. "If Moses supposes his toeses are roses"
brings forth peals of laughter. (Age, four and a
half months.)

and light feeding through the day restored normal conditions. After that the supply of milk was sufficient again for a while. This irregularity disturbed the steady progress of the averages, and the feces and skin also showed signs of disorder, though he continued to gain in weight and to grow stronger.

II. DETAILS. (See Chart VI, p. 40.)

1. *Number of meals a day.* From six meals a day the increase was made to between seven and eight, or to seven meals a day, if we omit two days when he was fed 11 and 10 meals, respectively.

2. *Intervals between meals.* The intervals between meals received a decided setback this month. Of the long periods there were:

10 intervals	5 hours or over.
4 " "	6 " " "
3 " "	7 " " "
6 " "	8 " " "
7 " "	9 " " "
3 " "	10 " " "
1 interval	11 " long.

The 34 long periods averaged about seven and one-half hours, about one hour less than last month, and the 179 short intervals averaged two and two-thirds hours, one-third of an hour less than previous month.

3. *Diet.* The length of time at the breast and nursing were increased from 7 to 7.85 minutes and from $3\frac{1}{2}$ to 5 minutes.

Water. An average amount of two and one-half ounces of warm water a day was given.

4. *Regurgitation and vomiting.* He ate for a longer time than last month, and regurgitated less, 50 times, average one-half tbs. (25 tbs. in all; previous month 44 tbs.), but vomited more, 68 times,

average two-thirds tbs. (44 tbs. in all; previous month 31 tbs.).

5. *Sleep*. He was sleeping 56% of the total time (11½% less than during the previous month). The average was brought down before that night of overfeeding, at which time he was probably hungry.

6. *Feces*. The feces came one in 25 hours. Twelve of 29 were smooth and yellow; nine were caught in the chamber. The disturbances were so slight that I made no change in the quantity of food eaten, but only tried to put myself in better condition. Five were slightly curdled; seven were slightly greenish; three were bright yellow (evidence of excessive fat, and as they came after I had been eating the cornmeal it was in all probability the cornmeal that made my milk too fat); six were both curdled and greenish, two of which were traced directly to my condition (I had a fever, and my digestive apparatus was impaired, probably from overeating); one was curdled, greenish and partly slimy. This was a notoriously hot month, and I have thought that possibly some of these irregularities in the feces were caused indirectly by the heat. During the period of overfeeding, strange as it seemed to me, the feces were perfect. The only way I can account for this is that the extra water and other liquid food I was taking may have changed my milk sufficiently to have affected his feces favorably.

7. *Skin*. His skin was not in so good condition before as after the two bad days. One way of accounting for this was the increased amount of water I gave him and the increased amount of liquids I took during the second half of the month. Four

6th Month

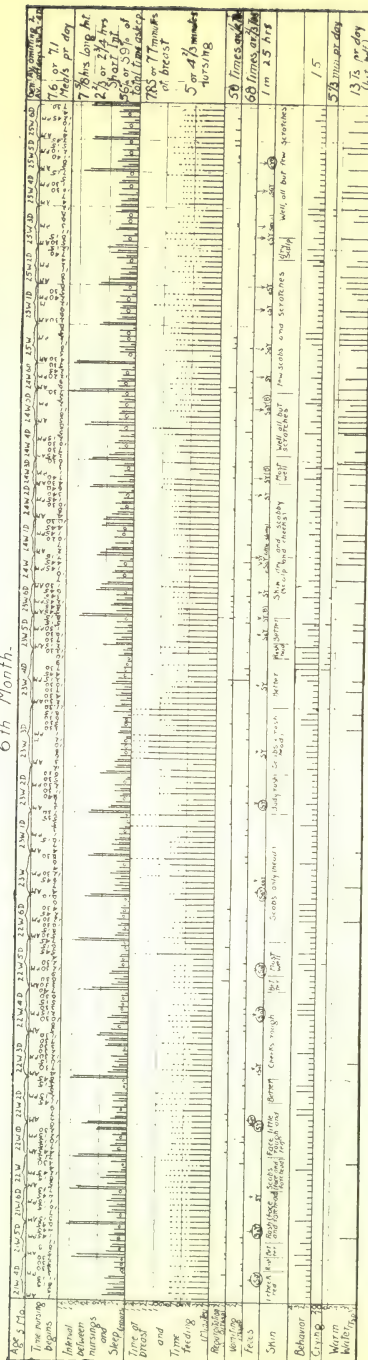


Chart VI. The month started well and ended well, but in between, a week and a half of overfeeding, ending in two very irregular days, about the middle of the month (easily picked out on the chart), spoil the symmetry of the month's pattern.

22 W. 1 D. Perfect SY movement, the first in 51 hours. 22 W. 2 D. Had difficulty in giving him enough to eat. Two extra feedings after 5 o'clock. 22 W. 5 D. A problem day. He seemed not to be able to get enough to eat. At 6.45, after much feeding, he was contented again, but did not go to sleep until after extra feeding at 7.45. 22 W. 6 D. A very hot day. This may account for wakefulness. 23 W. Either the milk supply is running low or he is demanding more food. 23 W. 2 D. Restless in the night. Fed at 12 o'clock, and went to sleep. 23 W. 3 D. Commissary department still meager with supplies. It takes both breasts at one meal to satisfy him. 23 W. 5 D. Overfed. Milk flowed freely when not expected. 24 W. Milk is coming all right again, and he is satisfied. 25 W. 2 D. Restless night. Gave him warm bath, a little food (two minutes' worth), and he went to sleep. Cause unknown. 25 W. 3 D. Restless night. Cause unknown. Went to sleep after a three-minute meal. 25 W. 4 D. and 5 D. Two greenish feces, traceable to my condition. I had a fever and my own feces were loose.



Fig. 4. A portrait study. (Age, five and three-quarter months.)

times in the first half of the month a rash appeared and lasted from one to two days, but these rashes occurred on very hot, humid days when there was no breeze stirring to keep the skin dry. He also had salt baths, one or two a day, according to the weather and his condition. They seemed to prevent or alleviate the rash. His cheeks were red and rough, and evidently itched, as he would scratch them and make them sore, so that scabs formed. During the second half of the month there was no redness, but only the dry scabs and scratches, and the scalp was a little dry.

8. *Cold.* No sign of a cold appeared during the month.

9. *Behavior.* His behavior averaged half-way between excellent and good. It was affected unfavorably first by underfeeding, then by overfeeding. The first time that he showed that he could be cross was during those two off days.

10. *Crying.* He cried very little, on an average only five and one-third minutes a day, while about half of all the crying occurred during the week and a half of wrong feeding.

11. *Weight.* He weighed $18\frac{1}{2}$ pounds on the twenty-fourth week, second day, about two and one-half pounds ahead of the Holt average, and a gain of one and one-half pounds over last month.

12. *Physical achievements.* From the twenty-second to the twenty-third week he was sitting up alone for from three to five minutes. (See p. 176. Plate I, Fig. 6.) On the twenty-third week, second day, he had his first ride out-of-doors in his carriage. He was out for an hour and sat up alone all that time.

(See photo, p. 176, Plate I, No. 11.) On the twenty-third week, fifth day, when I put my fingers in front of him he grasped them and drew himself up alone. He kicks and splashes in his tub.

13. *Remarks.* I had been neglecting to give him sufficient water to drink. The attack of indigestion brought me to my senses, and during the second half of the month he had, on an average, 13 teaspoonfuls of warm water daily. The effects on the skin are noted above.

7. *Seventh Month. (August.)* (See Chart VII, Fig. 5.)

An Almost Perfect Month.

I. BRIEF SUMMARY OF THE MONTH. This month records no serious setbacks, but in general steady progress. From the irregularities of underfeeding and overfeeding of the sixth month there was a return to more normal averages. He stood alone this month.

II. DETAILS. (See Chart VII, p. 44.)

1. *Number of meals a day.* The number of meals a day was reduced from seven and one-half to five and one-half; the fourth month had been about six.

2. *Intervals between meals.* During the fifth month the long interval between meals had been reduced three-quarters of an hour, but during this month jumped ahead one and two-fifths hours more than that of the fifth month and two and two-fifths more than that of the sixth month, and was now 10 hours. The short interval was also shortened one-third of an hour during the sixth month, but was now

7th Month.

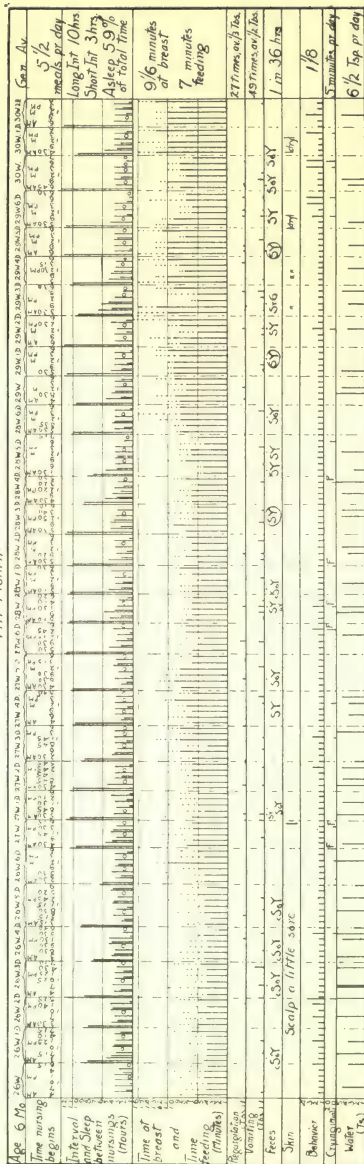


Chart VII. About as perfect a month as one could desire—long regular nights of sleep, meals at regular intervals, and all going well.

Letter "F," under crying, indicates that his crying at those times was for attention from persons. He was left alone to cry it out. Twice it lasted for about 15 minutes; the other four times for about 5 minutes.



Fig. 5. "This little pig went to market." (Age, six and three-quarter months.)

back to the record of the fifth month (three hours). There was a decided increase in the length of long periods:

3 intervals were 5 hours or a little over.						
2	"	"	7	"	"	"
6	"	"	8	"	"	"
2	"	"	9	"	"	"
7	"	"	10	"	"	"
9	"	"	11	"	"	"
4	"	"	12	"	"	"

The 33 long periods averaged 10 hours, the 136 short periods three hours.

3. *Diet.* The time spent at the breast was nine and one-sixth minutes, one and two-fifths minutes longer than the previous month, and the time spent nursing was seven minutes, two minutes longer than the previous month. He had an average of six and one-half teaspoonsful of warm water a day.

4. *Regurgitation and vomiting.* How the quantities of food eaten compared I do not know, but though the time spent in bibing was longer, the amount regurgitated was less—27 times, average one-third tbs., or nine tbs. in all (previous month 25 tbs.). And there also was a reduction in the amount vomited—49 times, average one-half tbs., or 24½ tbs. in all (previous month 44 tbs.). So whether the quantity was more or less, he was digesting it better.

5. *Sleep.* He slept about 60% of the entire day, an improvement of 3% on last month's record. He generally stayed awake after two of the day-time feedings.

6. *Feces.* Of 21 feces in 31 days (one movement in 36 hours), nine, or three-sevenths of the total, were perfect. Only three were caught in the cham-



Fig. 6. "Auto-education" begun. This desire to stand alone is his own notion. (Age, six and a half months.)

ber; not so good a record as previous month, which was 9 out of 29. Six were slightly greenish; five were both slightly curdled and greenish, and one was a yellowish-green. I could not trace the cause of these irregularities, but they were very slight, and disappeared without giving any further trouble. It was about this time that I noticed that the movements after the long intervals were quite likely to be perfect. Six of the nine perfect feces of this month came after an interval of about two days.

7. *Skin.* The skin was in good condition all the month, except for a little soreness of the scalp for the first week and a slight rash on three days, and for a little dryness of the flesh on two days, which was quickly remedied with white vaseline.

8. *Cold.* No cold symptoms appeared during the month.

9. *Behavior.* In behavior he came within one-eighth of being excellent.

10. *Crying.* On six occasions I am sure he cried for company (Chart VII, "F") after he had been put to bed. However, he was not taken up nor talked to, but was allowed to "cry it out" and to go to sleep, which he did in from 5 to 15 minutes. Even counting in these periods, he cried on an average of only five minutes a day.

11. *Weight.* He weighed 18.7 pounds, about two and one-half pounds above the Holt average.

12. *Physical achievements.* As for his physical development, he was making rapid progress. The day he was six months old, as he lay on his back in his basket (as in Pl. I, No. 14, p. 176), he kicked a tin pan for about an hour almost steadily. On the twen-

ty-seventh week, second day, he stood alone several times by his basket. (See photo, Fig. 6, and p. 178, Pl. II, No. 1.) Once I counted to 13 while he was standing there. He takes every opportunity to get hold of something to try to pull himself up on his feet. By the twenty-eighth week he was pulling himself up alone to a standing position. The twenty-eighth week, fifth day, I put a blanket and pillows on the floor, and he tumbled and rolled about there. This day he moved, by rolling, a distance of three feet.

8. *Eighth Month.* (*September.*) (See Chart VIII and Fig. 7.)

BRIEF SUMMARY OF THE MONTH. This was another month of general progress, though he did not gain in weight, in fact, he lost a trifle, and twice during the month there were irregularities lasting about a week each. The first of these (thirty-first week, first day, to thirty-first week, fifth day) came very near being a repetition of the sixth month's trouble—excessive feeding—but before any great harm was done I suspected that his crying was not for more, but for less food. At any rate, as soon as I cut down the quantity of food and omitted the night feeding there was no further trouble. The chart shows the return to long night naps and fewer meals a day after thirty-first week, sixth day, when these first reductions were made.

The second irregularity occurred from the thirty-third week, second day to the thirty-third week, sixth day, when he would wake every night about 3 o'clock. He did not cry and he was not cross, but he was not

2th Month

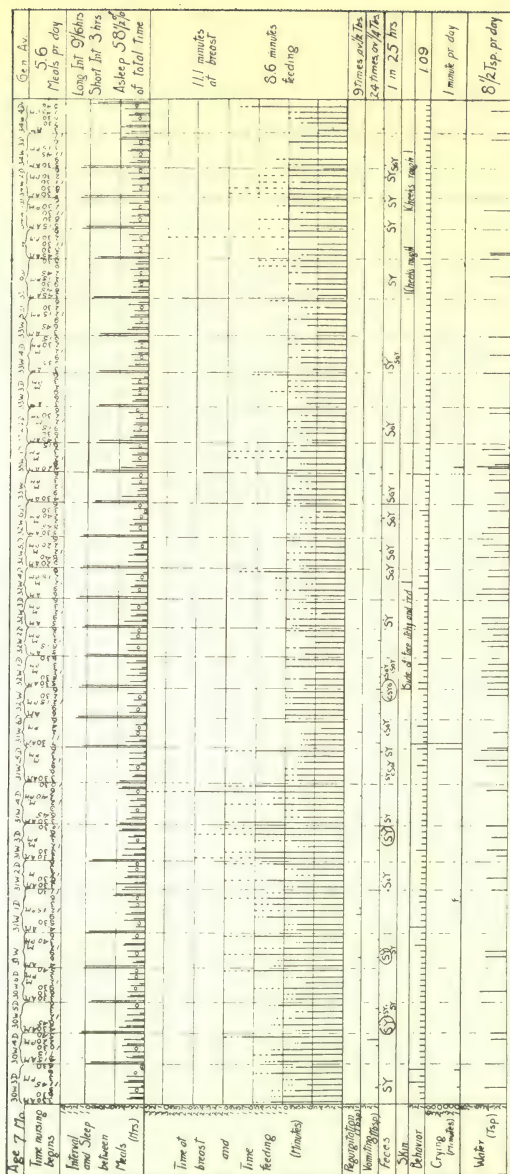


Chart VIII. Trouble started twice, during the second and third weeks, but was of short duration, and was soon understood and righted. Best record in behavior yet attained.

sleepy. Water did not satisfy him, and as there were no evidences of overfeeding, I fed him, after which he always went to sleep and finished out his rest. I thought that perhaps he was sleeping so much in the daytime that he was not sleepy at night, but that would not account for his going to sleep again after feeding at 3 o'clock, so I had to conclude that this was a true instance of under-feeding. And the cause of that was to be found in the milk supply. This would have been the right time to have begun to wean him, but I was very anxious not to introduce the new food till the warm weather was well past, so I still nursed him, at the risk of underfeeding, and avoided the risks of prepared food.

9. *Ninth Month.** (October.) (See Chart IX.)

The Beginning of Weaning.

BRIEF SUMMARY OF THE MONTH. This was a month of problems. The baby's customary long night naps were broken two-thirds of the nights, so that he was sleeping only 54% of the total time, as against 58% of the previous month. He was nursing two minutes longer at each meal than during the previous month ($10\frac{1}{2}$ minutes per meal), and I had begun to give other food in a bottle, average six and one-half ounces, 59 meals, out of 195. (For formulas, see chart.) The feces were coming almost twice as fast as during the previous month (one in $14\frac{1}{2}$ hours); he was crying nine minutes a day, on an average,

*The regular order of writing up the 13 items is omitted this time to avoid repetition.

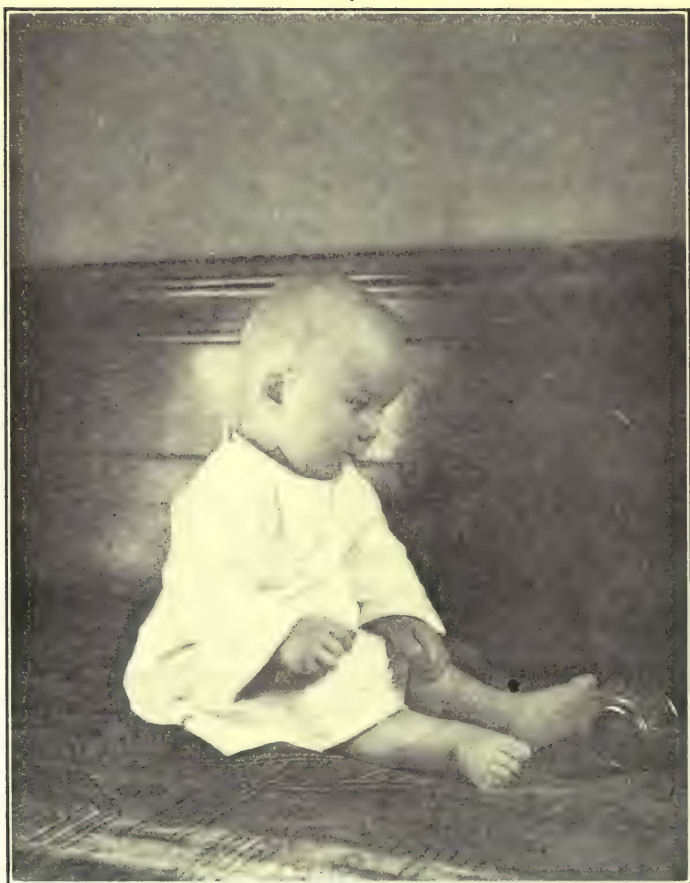
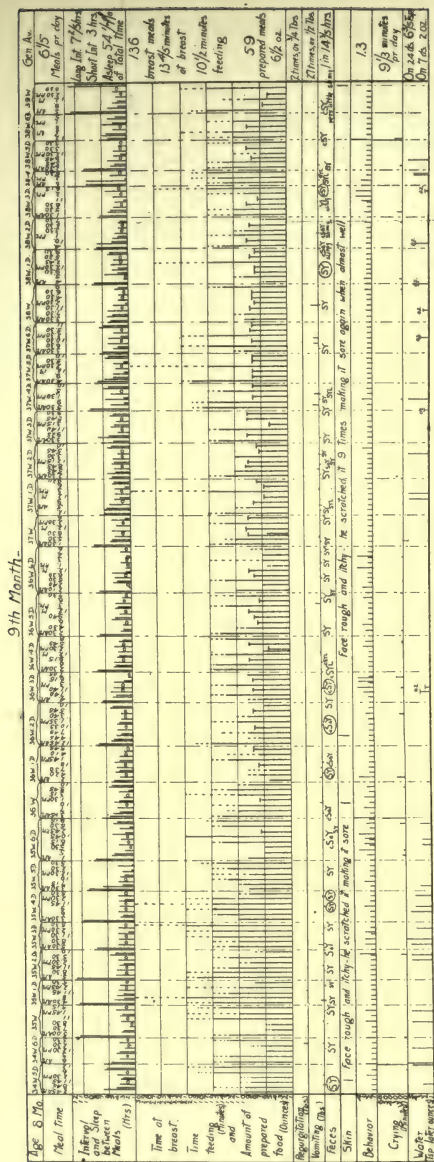


Fig. 7. Studying a new toy. (Age, eight and a quarter months.)



which was nine times as much as the previous month, and his flesh was a little rough and itchy. On the other hand, he regurgitated but very little—one and

NINTH MONTH.

Note: The vertical line that has a short horizontal line at top indicates bottle feeding.

34 W. 5 D. Awoke at 2.45 A. M., and again at midnight of that day. Difficult to account for this wakefulness. Is he overfed, hungry, wet or cold? He went to sleep again after being fed, but awoke again after the 12 o'clock feeding and cried for about an hour. I gave him water, but did not feed him, and he finally went to sleep.

35 W. Awoke twice, but was not fed. The first time went to sleep again; the second, waited patiently for half an hour for dinner, and did not seem hungry. Seemed dissatisfied after 7.30 meal, so fed him again at 8.30.

35 W. 2 D. Another problem-night. Awoke twice. Gave him warm water and warm bath, but he would not go to sleep, so I finally gave dinner.

35 W. 1 D. I believe the cause of his recent wakefulness is discovered. I have been taking long walks with him afternoons, and have used up my milk. Yesterday (35 W.) instead of walking about we sat on the roof, and in addition to that, I drank cocoa, hot milk and water, and ate cornmeal, so he had an abundant supper, and went straight to sleep. At 11 o'clock I changed his diaper without waking him, and he did not wake until 4.30 A. M., an interval of $11\frac{1}{4}$ hours. I fed him then, and again he slept; moreover, he took another nap between 9 o'clock and 12 o'clock. For once I feel certain that he was restless because he was hungry.

35 W. 3 D. An "off" day. Possibly some peaches I ate for supper disturbed the milk. If this is not the cause, then I do not know whether the trouble is from too little or too much food.

35 W. 6 D. My milk is evidently no longer to be depended upon, so I have decided to begin today with modified cow's milk, following as far as practicable Holt's formulas. (See Chart IX (continued) for formulas used.) Having prepared the bottle, I waited till he was very hungry, then gave it to him, but he refused to have anything to do with it. When I put it to his mouth he cried harder than he has ever cried. Twice I took him to the roof to calm him. After a while he became interested in chewing the nipple, and while he was playing with it I managed to squeeze a few drops into his mouth. Finally he began to suck; then all was calm; he drank contentedly and peacefully and went to sleep.

36 W. Cried for three-quarters of an hour before 3.15. Would not take warm water, but went to sleep after being fed. Cried

one-quarter tbs. the entire month, though he vomited 27 times, average one-half tbs. (13.5 tbs. in all). Thirty-two out of 51 feces were perfect; 15 were only

two minutes till fed at 10 o'clock. A happier day and more sleep. I believe he had not been getting enough to eat. New food apparently digesting fairly well; feces only a little curdled and a little green, but no vomiting or regurgitation.

36 W. 1 D. Another problem. What is the cause of the restless nights? Is he hungry, surfeited or otherwise in pain? After 2 A. M. he was fed a little, regurgitated a little, was not hungry, but could not go to sleep. I concluded that he had had enough to eat and had no pain, but why did he not go to sleep? However, he did go to sleep after a small meal at 4.30, and again at 10 o'clock as soon as fed. A perfect feces came at 8 o'clock, after an interval of 24 hours, but at 12 o'clock another came, which was slightly curdled and greenish. It is difficult to draw conclusions when the evidences are so contradictory. And always it is possible that his teeth trouble him and keep him awake. However, I must decide how to feed him tomorrow. I shall give him two bottlefuls, as he always sleeps after the bottle feedings, but shall wake him if he sleeps too long.

36 W. 2 D. Decided to change plans. After first bottleful he slept so soundly for 2½ hours that I did not wake him. But he did not sleep again all day. I gave the second bottleful at 5.45, after which he slept till 10 o'clock, when he was again hungry, and was fed a very little (5 minutes), and again at 4 o'clock for 6 minutes. (He has just formed the habit of sucking from the bottle. For the preceding four times he would bite and snap the rubber first.)

36 W. 3 D. The fact that he sleeps so soundly and seems so contented after taking the prepared food, and that the feces are good, if not quite perfect,* lead me to decide, at least tentatively, to continue to increase the quantity and quality of his food by giving more bottle feedings. After 3 o'clock meal, restless, and not sleepy when put down. After 6.15, cried, was fed again and went to sleep.

36 W. 5 D. Beginning again to act like his own self. I must have been underfeeding him.

36 W. 6 D. Too many feces. However, they are smooth and yellow, and not loose and not much at a time. This would seem to indicate that he is eating too much, yet twice today he still seemed hungry after meals. To strike the right balance is my problem. Of course, his teeth may be the disturbing element.

37 W. A very good day. Tried to pull through without the night feeding, but had to feed him at 12 o'clock.

*From here on in the charts, "L" under feces means loose.

slightly curdled, greenish or loose, and only four were curdled badly, green and slimy. He weighed 19.3 pounds, an increase of 0.8 pound. Again and

37 W. 1 D. Feces still too frequent, and beginning to be loose. Shall reduce quantity and quality, and leave out barley. (I had not yet learned the value of barley in restoring normality after the tendency had been toward the loose feces.)

37 W. 4 D. Yesterday and today bluish under the eyes, and cheeks pale. Threw up very sour curds after 1.30. Three feces came close together. Evidently over-fed or food too rich. Have cut down the number of meals, which was easy, because he was not hungry (two bottles instead of three or four). Have increased the water and omitted barley. Color in cheeks better tonight.

38 W. Feces normal again. Have given more warm water, and have diluted food, because the red spot on the eye, the itchy face and the rapid increase in weight seem to indicate too much or too rich food.

38 W. 2 D. He still wakes during the night. I would let him cry it out were it not for the neighbors. Feces bad. Omitted barley. Later I found out it would have been better had I omitted the milk.

38 W. 3 D. Fever. Called Dr. Caldwell. Upon his advice I gave a hot bath (108°), eight gray powder tablets every half hour, one tsp. castor oil, omitted artificial food, tried to starve him awhile, and between the breast meals to give very dilute barley gruel. He woke three or four times during the night, but soon went to sleep again without feeding.

38 W. 4 D. Temperature normal at 3 P. M., two loose movements from the castor oil. Feeling lively again this afternoon. I tried giving him barley between the breast meals, as the physician advised, but he refused it.

38 W. 5 D. He is again in excellent condition. Would not take barley plain, so added a little milk, sugar and limewater; then he took it and went to sleep immediately. From 10.45 to 12 P. M. he refused the bottle and cried intermittently when not diverted. Finally, I submitted and gave him a breast meal.

39 W. Woke twice, but went to sleep without being fed. A perfect day.

again when he seemed restless, I tried, as I had before, to satisfy him with water, but generally he would not be contented until he had had his full meal. The climax came on the thirty-eighth week, third day, with a fever and bad feces, when as an experiment I left the barley out of his food. (I had not yet learned the value of barley.) The fever was broken up in about 24 hours by castor oil and gray-powder tablets. A fast and breast meals restored normal conditions.

Though his teeth did not get through until the eleventh month, they were beginning to show, and I suspect that some of the irregularities of this month might have been caused by teething.

As for his physical development, he continued trying to get up on his feet at every opportunity, and while standing beside a chair, he enjoyed having me put my hands under his feet and raise and lower him while he kept his body erect and firm. (See photograph, p. 178, Plate II, No. 10.) He learned to manage his baby-tender so well that he could play hide-and-seek with me on the roof. (See photograph, p. 178, Plate II, No. 6.) He could hold his own weight by hanging from a stick (see photograph, p. 178, Plate II, No. 8) or from the clothesline (see photograph, p. 178, Plate II, No. 4).

So, in spite of his little irregularities, he was making progress and gradually being weaned. From one bottle feeding a day, he had gradually passed to four out of the six or seven meals.

As it is difficult to make an adequate summary of the various problems of this month and to avoid unnecessary repetitions, they are stated in the notes accompanying Chart IX:

Age	Milk Sugar (Lbs. Time Water Oz.)	Milk (Oz.) (certified)	Water (Oz.)	Barley (Oz.)	Total (Oz.)
8 Mo.					
35W6D		10%			*
36W1D					
36W2D		9%			
36W3D					
36W4D		7%			*
36W5D					
36W6D					
37W					
37W1D					*
37W2D					
37W3D					
37W4D					
37W5D					
37W6D					
38W					
38W1D					
38W2D					
38W3D					
38W5D					
38W6D					
39W					
	111123451234512345612345678				

Chart IX (continued). Formulas for bottle feedings, adapted from Holt.

1* First Series, Formula V. Holt.

2* Third Series, Formula II. Holt.

3* Third Series, Formula IV. Holt.

10. *Tenth Month. (November.)* (See Chart X and Fig. 8.)

Weaning Completed.

I. BRIEF SUMMARY OF THE MONTH. During this month the weaning was completed, and, I might add, without any inconvenience to me. As in the previous month, I continued to reduce the number of breast meals, while increasing the number of prepared meals. On the whole, I was solving the problem of his food better than during the previous month, so that in the matters of sleep, behavior, the number of and intervals between meals, and the number and character of feces, there was an improvement over the preceding month. On the other hand, he regurgitated and vomited the least bit more, and had a cold in the head and a cough, which interfered with his sleeping and made him cry considerably. His crying, however, during both this and the previous month may have been partly caused by his teeth, two of which were beginning to show white through the gums.

II. DETAILS. (See Chart X, p. 60.)

1. *Number of meals a day.* The number of meals a day was reduced from six to five (Holt advises six).

2. *Intervals between meals.* The intervals between meals, both day and night, were lengthened—the day interval from three to three and one-half hours, the night interval from seven and two-fifths to eight and two-fifths hours.

3. *Diet.* The time at the breast (only 33 breast meals were given) was increased from $13\frac{4}{5}$ to 14

10th Month:

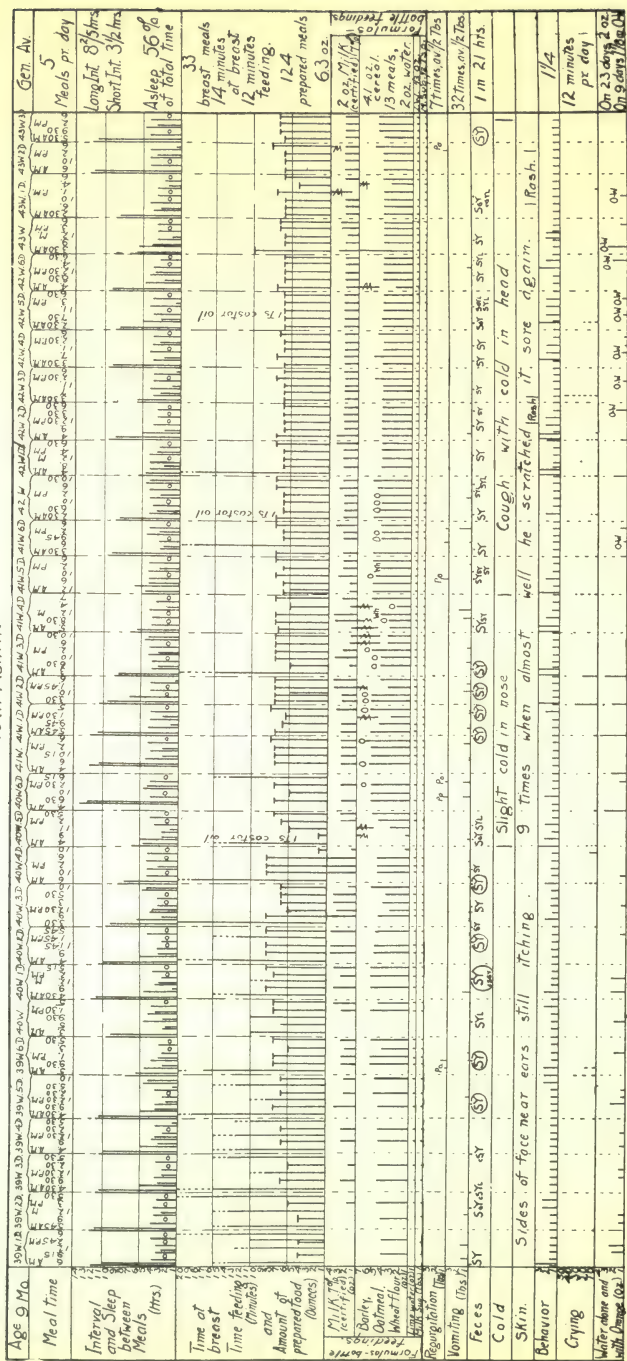


Chart X. This month pictures a better condition than the previous month. Sleep, behavior, intervals between meals, and intestinal condition all improved. His first cold came this month and gave a little trouble. Cutting teeth were probably causing tears.

minutes, and the time nursing from 10½ to 12 minutes (both of which increases may be accounted for by the fact that my milk was flowing less vigorously). Holt advises not more than 20 minutes. The re-

TENTH MONTH.

39 W. 1 D. Awake from 3 A. M. to 4 A. M., cried, was restless, but was not fed.

39 W. 2 D. Awake for a minute or two, but was not fed.

39 W. 5 D. Awake for one-half hour, but was not fed.

40 W. Fed at 3 A. M. to relieve pressure on my breasts. A breast pump would have better served the purpose.

40 W. Feces loose, so omitted one meal (afternoon).

40 W. 1 D. Woke twice, fretted for a time, then went to sleep.

40 W. 4 D. Woke at 1 A. M., 3 A. M. and 4 A. M. Cried a little, but went to sleep.

40 W. 5 D. Woke three times; cried himself to sleep. Had two feces, close together, and a slight cold. I surmised he was getting too much to eat, so cut down food, gave two meals of plain barley and water. At 8.30 A. M. gave 1 tsp. castor-oil and 1 tsp. orange juice. Better by evening, breathing through nose.

40 W. 6 D. An excellent night. When he awoke at 4 A. M. I gave him a drink of warm water in his bottle, and he went to sleep again at once.

41 W. Another good night. Gave 2 oz. warm water at 4 o'clock.

41 W. 2 D. Woke at 3 A. M., cried, would not be satisfied with water, so was fed.

41 W. 3 D. Woke, cried, did not want water; finally was given breast meal and then went to sleep. Color is good; eyes are big and bright; sits up straight in carriage.

41 W. 5 D. Fed at 12 midnight, but could not sleep. Cold bad; head stopped up; coughed. Went to sleep after nose was sprayed with mucol.

41 W. 6 D. One ounce warm water and a feeding at 3.30 A. M. After I had fed him I felt certain he did not require that food.

42 W. His cold keeps him awake again. Gave castor-oil at 8 A. M. At 5 P. M. put drops (menthol and albolene, Dr. McCastline's prescription) in nose.

42 W. 1 D. Again awake at 3.30 A. M., and again fed, which I now believe was a wrong thing to have done.

42 W. 2 D. Awake from 3.30 A. M. to 5 A. M., coughed, was restless, had drops put in nose and was fed, the latter probably

maining 124 prepared meals averaged 6.3 ounces. I am able now to compare the quantity exactly with Holt. Five meals a day, averaging 6.3 ounces a meal, amounts to $31\frac{1}{2}$ ounces in 24 hours. Holt advises,

unnecessary. Rash on body. Evidently I had not reached the cause of his trouble, and though his cold and rash were slight, I called Dr. Caldwell for advice. He advised a mustard bath, which relieved the baby's head, though he did cough some after it. The physician said his condition was not alarming, but merely an intestinal disorder.

42 W. 3 D. Rash gone. Cold much better.

42 W. 4 D. Woke coughing, and coughed a long while. Inhaled fumes of benzoin, coughing finally stopped.

42 W. 5 D. Gave third dose of castor-oil, because the feces were a little greenish, still hoping thereby to help the cold. Cough seems loose. Possibly it is whooping-cough.

42 W. 6 D. Best night for about a week.

43 W. 1 D. Bad feces and a rash. Gave two meals of barley and water. Very much better today. No serious coughing for two days. Eager to walk; laughs heartily. Teeth not yet through, but bigger and plainer in the gum. I believe his restlessness has been caused in part, by teething pains.

43 W. 2 D. Rash gone.

43 W. 3 D. Have discontinued orange, thinking it might have caused trouble with feces. Also changed nipple, as the milk was coming too fast. Feces perfect again today, after an interval of 40 hours.

from the ninth to twelfth month, 35 to 45 ounces in 24 hours. So Leonard was getting three and one-half ounces less a day than the smallest amount Holt advises.

The formulas for these meals (see Chart X) were determined by the "conditions present" before each meal. I aimed to give the baby just as much as he could assimilate well, but to reduce the quantity or to weaken the quality whenever I saw what seemed to me warrant for so doing. For instance, after too frequent feces, or a disturbed feces, plain barley was given. In the chart thirty-ninth week, first day and second day; fortieth week, fifth day, to forty-first week, and forty-third week, first day, to third day, illustrate the effect of plain barley on the feces. The feces became perfect and less frequent. I also experimented with oatmeal. From the fortieth to forty-first week, which was the week preceding the one in which I gave the oatmeal, he had nine movements; during the week in which he had oatmeal (forty-first to forty-second week) he had 13 movements, about two a day; during the following week with no oatmeal he had 11 for the week, and in the three days following that week (forty-third week to forty-third week, third day), when barley was given three times plain, he had only three movements, or only one a day. This meant that oatmeal would be the best food for him should he be inclined to be constipated, but he had not yet required that treatment. Twice I tried prepared wheat flour, but noted no unusual effects. I did not continue using it, because the barley had already proved so satisfactory that I kept to it alone for a while longer. As for the proportion

of milk to barley, after varying these and noting results, I found, by about the middle of the month, that two ounces of 7% milk and four ounces of barley, with one-third ounce of lime water and one-quarter tbs. milk sugar, gave the best results. When the feces were curdled or greenish, I generally reduced the milk, or if the disturbance was very bad left it out altogether. Three times during the month I gave him castor oil, not because the feces were bad, but with the hope of breaking up his cold by cleaning out the intestines. This method did not succeed in this instance. Local application was needed.

Again and again I tried to eliminate the night meal. Six times he fretted for a time, but went to sleep without being fed. Twice he fell asleep after taking two to three ounces of warm water instead of food, but for about half of the month I fed him when he awoke, between 6 P. M. and 6 A. M., though on three of these occasions I tried water first.

Water and orange juice. He was drinking an average of two ounces of water a day for 23 days, and during the remaining nine days, I gave him some orange juice with the water, averaging one and one-eighth ounces a day. I did not record the exact amount, but it was the juice of half an orange.

4. *Regurgitation and vomiting.* He regurgitated but little, three and one-half tbs. in all, though this was more than twice as much as during the previous month, and he vomited 32 times, an average of one-half tb., or 16 tbs. in all (previous month 13.5 tbs.).

5. *Sleep.* As would be expected, he was sleeping better than during the previous month—56% of the



Fig. 8. Safe in the fold. (Age, nine and three-fourths months.)

total time—which was 2% more than during the previous month.

6. *Feces*. There was a decided improvement in the number of feces, one in 21 hours, instead of one in $14\frac{3}{5}$ hours, and their character was as follows:

Out of 42, 27 were perfect;

1 was curdled a little and yellow;

4 were smooth, but greenish yellow;

1 was both slightly curdled and greenish yellow;

6 were smooth and yellow, but loose, and 5 of these were caused by castor oil.

1 was curdled, greenish yellow and loose.

1 was slightly curdled and loose.

1 was smooth, greenish yellow and loose.

7. *Skin*. As for the condition of the skin, the sides of the face near the ear continued to itch. Cold cream and vaseline, half and half, or zinc ointment, would often heal it, but it would no sooner be well than in an unguarded moment he would scratch it sore again. He did this nine times. I hoped that as soon as the food was right the face would get well, but at the same time I tried to find the right local treatment for the sore flesh—something to stop the itching.

8. *Cold*. A cold proved to be the difficult problem of the month. It began in the second week, with only a slight cold in the head, and I now believe that had I known the use of mucol and used it at the first sign of the cold, all further developments would have been checked. But I did not know what to apply locally, so what I did was to keep his bowels free from anything that might be causing trouble there, and three times they were cleared out with castor oil. Also I kept him out of doors as much as pos-

sible. When the cold had lasted for nine days Dr. McCastline suggested dropping menthol and albolene in the nose, and I tried it, much to the baby's relief. But about a week later a cough developed, which would manifest itself at night, and four times I had to use the fumes of benzoine to stop the coughing. Once from the way in which he caught his breath I feared it might be whooping-cough. After this I rubbed camphorated oil on his chest a few times at night and gave him two mustard baths. By the end of the month the cold was practically well.

9. *Behavior.* His behavior (1.25) was not as good as it had been during the eighth and ninth months.

10. *Crying.* He cried an average of 12 minutes a day, which was about three minutes longer than that of the previous month, and, judging from the fact that he kept putting his finger in his mouth so frequently, I feel certain that much of his crying was due to teething pains.

11. *Weight.* His weight (18.7 pounds), though he lost this month because of the cold, had not fallen below the Holt standard; in fact, was about even with it.

12. *Physical achievements.* He was still using every opportunity to stand, in fact, was quite at home on his feet, though he had to grasp something to keep his balance (see p. 178, Plate II, No. 5).

11. *Eleventh Month. (December.)* (See Chart XI.)

BRIEF SUMMARY OF THE MONTH. This is even a prettier month (considering the good-looking chart

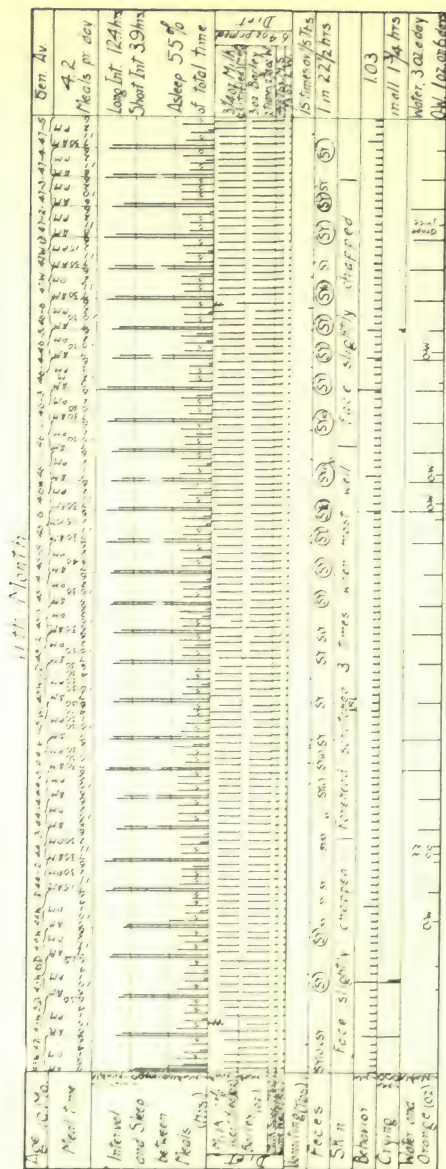


Chart XI. The beauty in the regularity of this month is striking, after the unfortunate irregularities of the two preceding months. Behavior, best yet attained, 1.03.

it makes) than were those other excellent ones, the fourth and seventh. All I can conclude, is, that though three teeth came through, none of them was troublesome, and that I must have been nearly right in the control of food. It was a month of practically uninterrupted progress.

12. *Twelfth Month. (January.)* (See Chart XII and Fig. 10.)

BRIEF SUMMARY OF THE MONTH. The achievement of this month was Leonard's learning to walk absolutely alone. (See Fig. 9.) He accomplished this just two days before he was a year old. Aside from this, there was no unusual development as compared with the preceding month.

13. *Thirteenth Month. (February.)* (See Chart XIII.)

BRIEF SUMMARY OF THE MONTH. This was another month of continued growth. The passage from 10% milk toward straight milk was gradually being made.

14. *Fourteenth Month. (March.)* (See Chart XIV.)

BRIEF SUMMARY OF THE MONTH. This was another month of general progress. He was taking straight milk. A few meals had to be reduced and diluted to rectify slight evidences of indigestion. He walks, runs and climbs more vigorously.

15. *Fifteenth Month. (April.)* (See Chart XV.)

BRIEF SUMMARY OF THE MONTH. Again there was progress through the month. The particular achieve-



Fig. 9. He taught himself to walk "all alone" before he was a year old. (Age, one year.)



Fig. 10. A pleasing diversion. (Age, eleven and three-quarter months.)

ment, however, was the addition of wheat (prepared flour), farina and cream of wheat to his menu. A second trial proved oatmeal to be too loosening for the feces. A slight cold, broken up within two days, and a prolonged attack of vomiting (the first of the kind he had had), were the only disturbances of the month.

16. *Sixteenth Month. (May.)* (See Chart XVI.)

BRIEF SUMMARY OF THE MONTH. Nothing very unusual developed this month, but the feces were a puzzling problem. Nine times the diet had to be reduced in order to check too frequent movements. The cause for this irregularity may have been the teeth, for I concluded his teeth pained him because he drooled, put his fingers to his mouth, and occasionally fretted and cried. Other than this, there was nothing distinctive in the month's development.

17. *Seventeenth Month. (June.)* (See Chart XVII.)

BRIEF SUMMARY OF THE MONTH. As this month marked the beginning of that season most dreaded for babies, the second summer, I was most conscientious in noting every irregularity and in endeavoring to keep all functionings under my control, and but for one teething disturbance of a week's duration, the month was one of continued gain. (See Figs. 11 and 12.)

18. *Eighteenth Month. (July.)* (See Chart XVIII.)

BRIEF SUMMARY OF THE MONTH. Another uninterrupted month of progress. (See Figs. 13 and 14.)

15th Month-

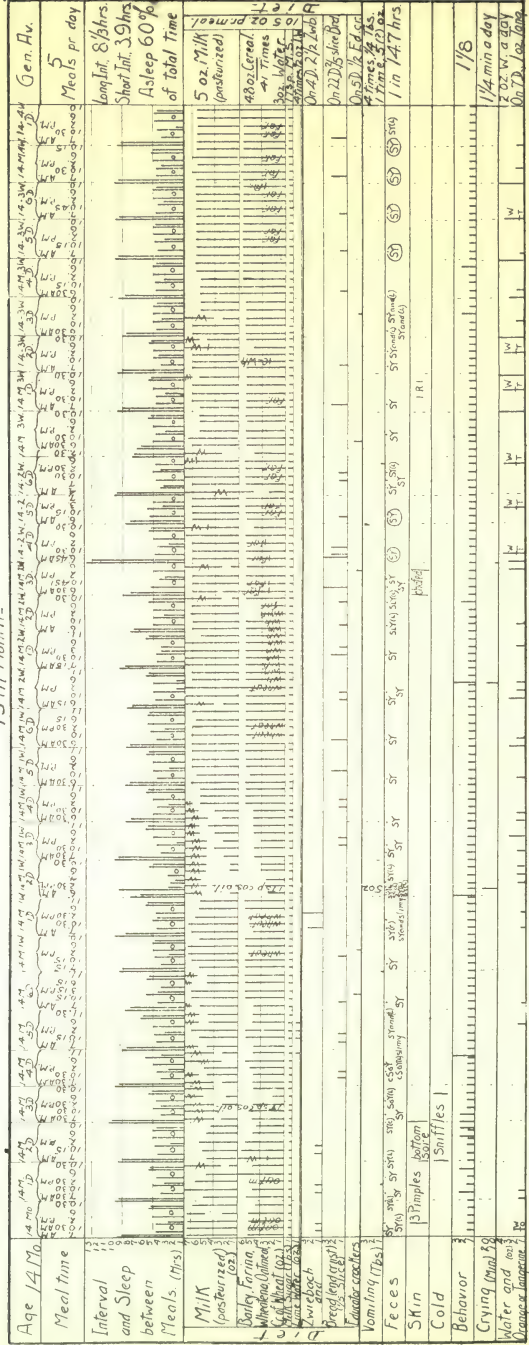


Chart XV. A month of regularity in living, and of general gain, but still an evening meal seems necessary.

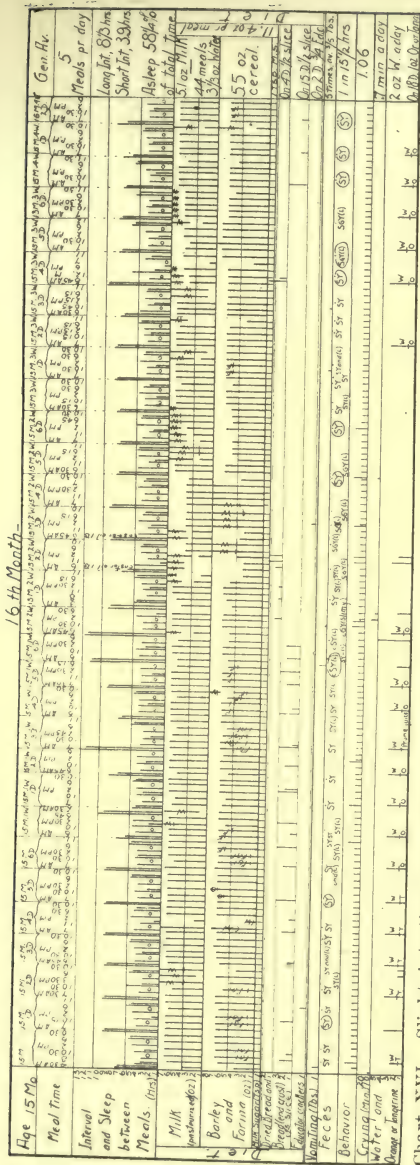


Chart XVI. Slight intestinal irregularities, probably caused by teething pains, necessitate frequent changes in the diet. Four nights without a late evening meal, but generally the five meals a day are necessary.

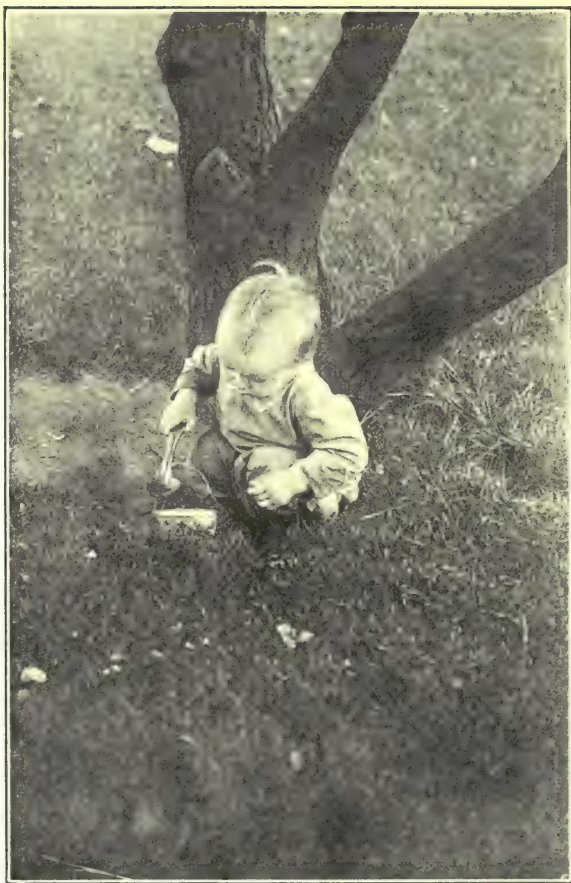


Fig 11. Acquiring skill in manipulating a spoon. (Age, sixteen and three-fourths months.)

To his menu are added four cereals—oatmeal, hominy, wheatena and rice—and zwiebach is given regularly with his meals. Also four dry nights stand to his credit, and he is beginning to ask to go to the toilet, “À, à” (a as in ask).

19. *Nineteenth Month. (August.)* (See Chart XIX and Fig. 15.)

BRIEF SUMMARY OF THE MONTH. Another month of gain in all details. The new achievements were in the line of bodily activities. He walked both up and down six flights of stairs, holding my hand and sometimes the banister; he climbed up four rungs of a ladder (see p. 180, Plate III, No. 9; climbed all around the benches in the park, getting down safely alone from them, and tried several times to jump up off the ground.

20. *Twentieth Month. (September.)* (See Chart XX.)

BRIEF SUMMARY OF THE MONTH. Two periods of about two days each were the only exceptions to continued progress during this month. A hot bath, castor oil, a reduction of the diet and three gray-powder tablets broke up a slight fever and restored normal conditions in the first period (nineteenth month, first week, second day, to nineteenth month, first week, third day). In the second (nineteenth month, second week, to nineteenth month, second week, second day) a slight cold in the head, accompanied by hoarseness, was broken up by the third day with the



Fig. 12. Playing on the roof. (Age, sixteen months.

17th Month-

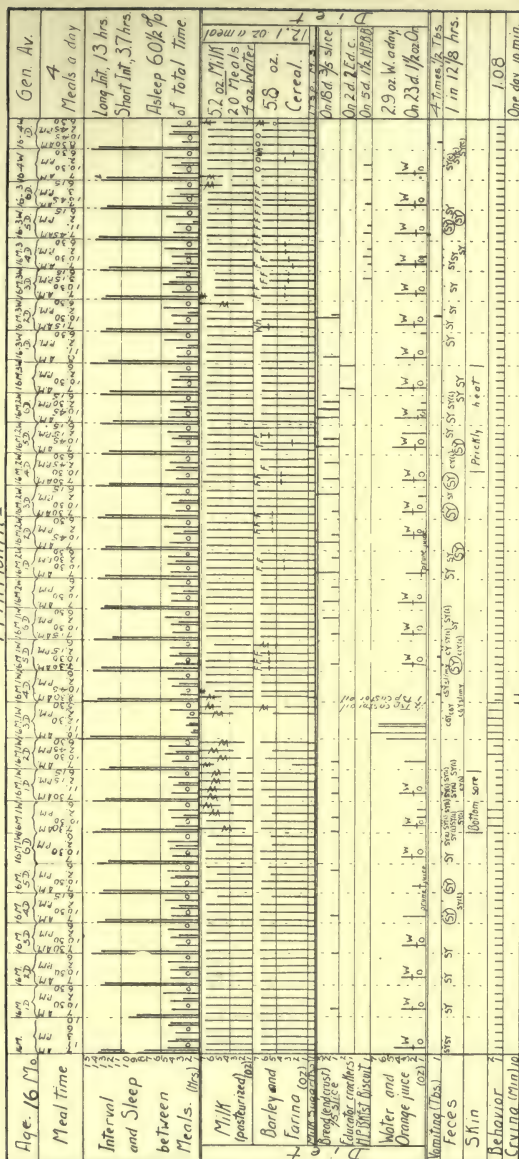


Chart XVII. Back to the long nights of the eleventh month, making four meals a day the rule. Teething pains give a week of slight trouble. Otherwise all was well.

Age - 17 Mo	Meal time	Gen. Av.
174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200	<p>Internal and Sleep between Meals (Hrs)</p> <p>Milk (pasteurized) (oz)</p> <p>Barley farina (oz)</p> <p>Optical Honey</p> <p>Wholesome Rice</p> <p>Gran. Sugar</p> <p>Zwiebach</p> <p>Orange juice (sp)</p> <p>Triacuit</p> <p>Water and Orange juice</p> <p>Warming (lps)</p> <p>Feces</p> <p>Behavior</p> <p>Crying</p>	<p>Meals a day</p> <p>Long Int. 12 1/2 hrs</p> <p>Short Int. 3 1/4 hrs</p> <p>Asleep 6 1/2 hrs</p> <p>of total time</p> <p>59 oz. Milk</p> <p>10 meals</p> <p>3 oz. Water</p> <p>52 oz. Cereal</p> <p>On 18 1/2 hrs</p> <p>On 7 1/2 a crust</p> <p>On 9 1/2 a crust</p> <p>3 oz. W. a day</p> <p>1/2 oz. Or. a day</p> <p>5 Times a day</p> <p>1 m 13 1/5 hrs</p> <p>103</p> <p>Twice 20-5 min</p>



Fig. 13. Enjoying a joke. (Age, seventeen months.)

Chart XIX. An attack of vomiting disturbed an otherwise perfect month. On some days three meals a day are sufficient. General progress made.



Fig. 14. A straight back. (Age, seventeen and a half months.)

use of menthol and albolene, mucol, and the exclusive use of barley as the cereal in the diet.

21. *Twenty-first Month. (October.)* (See Chart XXI and Fig. 16.)

I. BRIEF SUMMARY OF THE MONTH. This was as near a perfect month as one could wish it to be. A little roughness of the flesh and a few pimples and one attack of vomiting were the only irregularities noted, and progress was made in all directions.

II. DETAILS. 1. *Number of meals a day.* He ate 3.7 times about as frequently as during the previous month, 3.8.

2. *Intervals between meals.* The intervals varied but little; the long one was shorter by .3 of an hour, or went back to 13 hours, and the short one increased .1 of an hour, making it 3.8 hours.

3. *Diet.* The total amount, 10.2 oz., was the same as for the previous month, but the milk, 6.85 oz., was an increase of .65 oz. over the previous month, and the cereals were also thicker, barley being used only six times. To be sure, water was used five times, an average of 2.4 oz. (previous month three times, 2.8 oz.), but twice this was to soften some very thick hominy that had cooled and was hard, so that really only three meals were diluted with 2.4 oz., less than the previous month. The amount of cereal used, 3.5 oz., was 0.5 oz. less than for the previous month, but the increased thickness meant an increase rather than a decrease in value. Of the cereals used, farina lead the list, appearing 42 times alone and 3 times with others (previous month 29 times alone and 4



Fig. 15. Portrait. (Age, eighteen months.)

20th Month-

Age, 19 Mo	19th 19th																								Gen. Av.
	19th	19th	19th	19th	19th	19th	19th	19th	19th	19th	19th	19th	19th	19th	19th	19th	19th	19th	19th	19th	19th	19th	19th	19th	3.8
Meal time	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	Meals a day
Interval and Sleep between Meals (hrs)	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	Long Int. 13.3 hrs. Short Int. 3.7 hrs.
Milk (pasteurized) (oz)	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	Asleep 58%
Barley, farina, etc.	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	6.2 oz Milk 3 meals 2.8 oz Water
Apple, banana, etc.	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	4 oz Cereal
Other foods	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	2 zwab. a meal
Water, and Juice of Orange or Pine Syrup	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	3/3oz W. a day On 22nd 7oz Or. On 23rd 7oz Pine On 24th 7oz Pine
Feces	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	1 in 19 hrs.
Cold	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	1.08
Behavior	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	4 Times 1/4 hr.
Crying (Min)	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	11:50 AM	

Chart XX. A fever, and later a cold were quickly handled, restoring normal conditions rapidly, so that the general appearance of the month is scarcely disturbed.



Fig. 16. Walking wheelbarrow fashion. (Age, twenty months.)

21st Month—

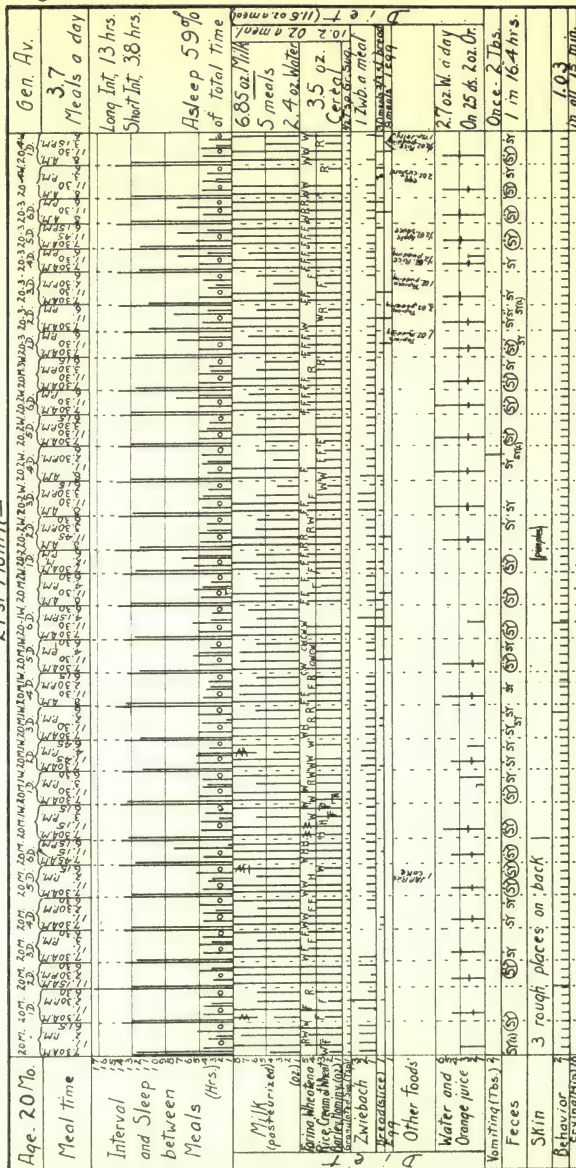


Chart XXI. This is the most nearly perfect month since artificial food was given, ninth month. A greater variety of foods is handled, behavior is again at the high-water mark of 1.63, and for about one-third of the time three meals a day satisfy.

20 M. to 20 M. 6 W. Flesh rough in three patches on buttocks. Possibly due to meat or eggs, but may have been caused by baby being too long in soapy bath.

20 M. 2 W. 1 D. to 20 M. 2 W. 2 D. Pimples caused by feces lying against flesh in diaper.

with others); wheaten followed, 28 times alone and 3 times with others. Then followed rice, 16 times alone and once with others, which was 10 more times than in the previous month. Barley came fourth, 6 times alone, or 22 times less than in the previous month; cream of wheat next, 5 times, and last hominy, used 4 times alone and twice with others (these two last were used about the same during the previous month). So again, as in the previous month, the slight reduction in quantity is accompanied by a greater relative increase in quality. One-half tsp. of granulated sugar was added to each meal, and a piece of zwiebach was given each time (previous month 1.7 pieces); also for 30 meals about two-thirds of a slice of bread each, and for 9 meals an egg was given. The extra things tried—all of them seemed to digest well—were a Japanese rice cake, tapioca pudding, rice pudding, custard pudding and jelly.

But few modifications were made in the formulas to correct irregularities. On twentieth month, second week, fifth day, the baby seemed to be not very hungry, and, as I attributed his loss of appetite to excessive eating, barley was resorted to for the day. Also the afternoon meal (from 2 to 3 o'clock) was generally very small, or was omitted (eight times) when he was not hungry.

Water and orange juice were given as usual—2.7 oz. of water a day, and on 25 days, 2 oz. of orange juice each.

4. *Vomiting.* On twentieth month, second week, fourth day, 2 tbs. were vomited, evidently from an overcrowded stomach; at least no other cause was apparent.

5. *Sleep.* The night naps lost a trifle. From 11.75 hours, they were reduced to 11.6 hours, but the day naps more than compensated, with a gain of 0.4 of an hour; *i. e.*, they were 2.7 hours.

6. *Feces.* But for three slightly loose feces, the feces were perfect throughout the month, and 19 out of 44 were caught in the chamber.

7. *Skin.* A little roughness appeared on the buttocks, the cause of which I could not ascertain. It came after he ate some meat and egg, or it may have been caused by an excessive amount of soap being used in the bath. However, after its first appearance, it grew fainter, and in about a week it disappeared altogether. At another time a few pimples appeared that were caused by the feces being left in the diaper against the flesh for a few minutes. A little zinc ointment soon healed them.

8. *Cold.* No sign of a cold appeared during the month.

9. *Behavior.* The high average attained this month, 1.03, was reached only twice before, during the tenth and during the seventeenth months. On three occasions when he fretted he stopped after having tannic acid rubbed on his gums. Twice he resented being put to bed when guests were here. Otherwise he was a perfectly contented baby.

10. *Crying.* The teeth brought few tears, or at least tannic acid soon stopped his crying. In all he cried about 15 minutes.

11. *Weight.* He weighed 27.6 lbs. (2.6 lbs. above the Holt average).

12. *Physical achievements.* Increasing facility of motion was shown in all physical activities. He

feeds himself with no assistance now, and frequently with no one watching him, and spills but little on his bib.

13. *Teeth.* The twelfth tooth came through—the lower, right, front double tooth, the last of the four front double teeth.

14. *Remarks.* In trying to keep his thumb out of his mouth he has lost some sleep. The sucking habit is not broken, but I keep the thumb out of his mouth as much as I can.

22. *Twenty-second Month. (November.)* (See Chart XXII.)

BRIEF SUMMARY OF THE MONTH. The month's, and practically the year's, progress (for it was just one year ago, at nine months, that he had his last setback) was interrupted by a cold, which lasted eight days and was accompanied for a day by a fever. His teeth also pained him during this period, and may have been a cause in bringing about the fever. During that week, the third week of this month, the diet was considerably reduced, which meant a general reduction in the diet averages for the month; but considering the averages for the week following the cold (the last week of the month), when the diet returned to a normal amount, the amounts generally show an increase.

23. *Twenty-third Month. (December.)* (See Chart XXIII.)

BRIEF SUMMARY OF THE MONTH. In spite of a little intestinal irregularity lasting about four days, and

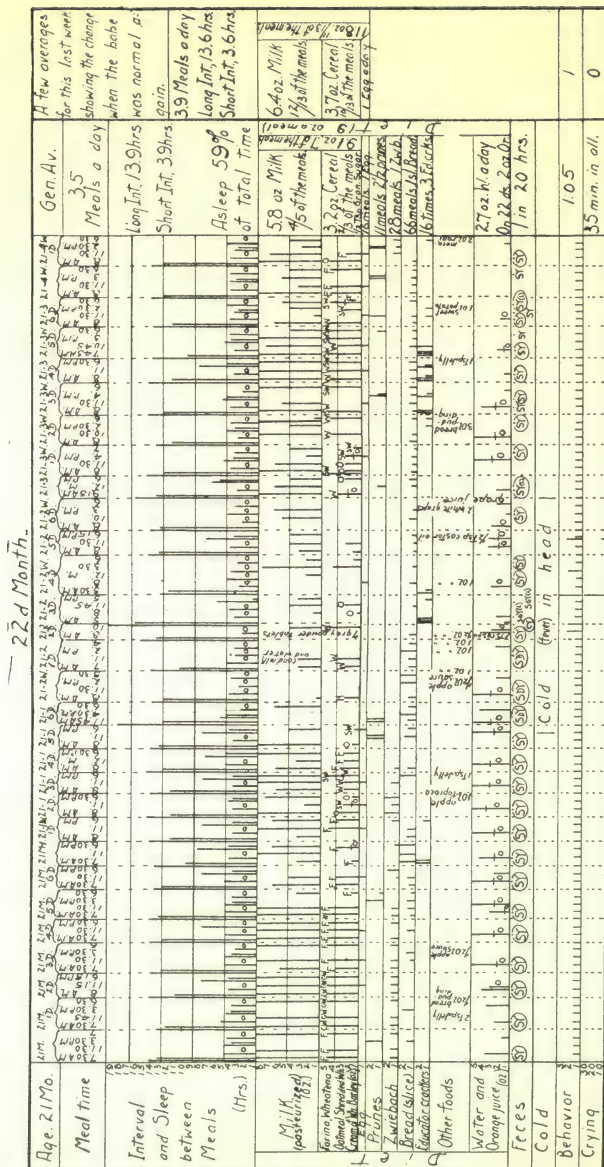


Chart XXII. The most irregular looking chart since the ninth month. Teething pains and a cold disturbed the regularity of life's ways.

a cold lasting five days, the month generally was a good one. One development of the month was the transition from four to three meals a day, effected by omitting the afternoon meal, making a long afternoon period from dinner to supper time. An evidence of his increasing muscular development and control is shown in his walking up and down six flights of stairs, holding my hand and the banister. He did this several times. A few dry days and several dry nights also show a gain in the control of excretion.

24. *Twenty-fourth Month. (January.)* (See Chart XXIV and Figs. 17, 18 and 19 [Frontispiece]).

A Bad Teething Month.

I. BRIEF SUMMARY OF THE MONTH. The problem of the first three weeks of this month was to remedy the loose feces. Those foods, such as oatmeal, shredded wheat, wheaten, prunes and bread, that tended to make the feces loose were omitted, or used very sparingly, and only those were used that heretofore had kept the feces compact, such as barley, farina, cream of wheat and zwieback. Yet for 24 days the feces remained loose, though perfectly smooth, a good yellow in color and regular in time. It would seem as if the cutting of the eye teeth were the cause. The right eye tooth came through early in the month, but the left one not until the following month. The feces, however, became perfect before the tooth came through. From several indications I know that cutting this tooth pained him. He drew in his lower lip and held the upper teeth and upper

23d Month-

Dge 22 Mo.	Gen. Av.
Meal time.	3.2
Interval and Sleep between Meals (Hrs.)	Meals a day
Milk (pasteurized and sterilized) (oz)	Night Int. 13.8 hrs. Morning Int. 3 1/2 hrs. Afternoon Int. 6 1/2 hrs. Asleep 59%
Meals	of total time
Milk	63 oz Milk
Boiled Shredded Milk	11 meals
Adminal Barley	2.8 oz water
Wheat Flour (oz)	3.2 oz Cereal
Wheat Flour (oz)	1/5 of the meals
Eggs	16 meals 3 1/2 cups
Prunes	54 meals 13 1/2 oz
Zwiebach	50 meals 1 slice
Bread (rice)	9 times 1/2 Each
Educational crackers	14 meals 1 tsp jelly
Jelly (asp)	
Other foods	
Orange juice	1 in all 10 1/2 oz W
Water (oz)	On 27 days 2 oz On
Feces	1 in 18.6 hrs
Cold	Cold light in head
Behavior	
Crying (min)	1.05
	22 min in all

Chart XXIII. Back again to a better looking month. A little intestinal trouble made a slight disturbance. Three meals a day have become the order.



Fig. 17. In his wheelbarrow on the roof he carries great loads back and forth. (Age, twenty- three and a half months.)

24th Month-

[illegible]

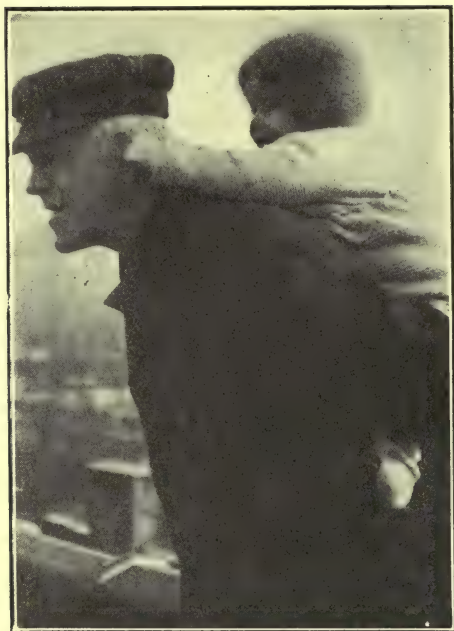


Fig. 18. Off for a trot with Daddy. (Age, twenty-three and a half months.)

lip tight over it. He fretted, or even cried, and asked to have the tannic acid put on his teeth, which always brought relief.

A second problem appeared in the third week of this month with a prolonged attack of vomiting, followed the next day by a fever. By the fourth day castor oil, baths and gray-powder tablets had restored normal conditions; by the fifth day the feces became compact again. The cause was probably overfeeding.

II. DETAILS. (See Chart XXIV, p. 98.) 1. *Number of meals a day.* The habit of having three meals a day is now well fixed. When he wakes in the afternoon he has orange juice and water. There were five four-meal days after the upset, when the meals were still reduced in quantity, so that little and often was the rule.

2. *Intervals between meals.* Two periods, one of 23 hours and one of 22 hours, that occurred after the siege of vomiting bring up the average of the long period from 13.8 hours to 14.6 hours; but, averaging the first three normal weeks, it is a trifle less than the previous month, 13.6 hours. The morning interval averages a trifle more, 3.7 hours (previous month 3.6 hours), and the afternoon period as much less 6.4 hours (previous month 6.5 hours).

3. *Diet.* No new foods were added to the diet this month because of the prevailing looseness of the feces. I was able to try only one new dish—beef and barley soup—toward the end of the month. I am not quite sure how the beef digested, as three of the movements following were curdled, but five were smooth. Of the regular foods he had about the same average amount of milk, 6.4 oz. (previous month 6.3

oz.), and less water was added, four meals, $2\frac{1}{2}$ oz. (previous month 11 meals, 2.8 oz.), but the average for the first three weeks, 7.5 oz., shows an increase of 1.2 oz., the largest increase made in any one month. Possibly it was this excessive amount of milk that disturbed the intestines. Once I tried boiling milk (though this makes the proteid harder to digest); again, I added lime water to the milk, but even this did not correct the looseness. Condensed milk was given one morning when the regular milk failed to arrive in time. The cereal, as well as the milk, also increased over the previous month, 3.4 oz., 85% of the meals (previous month 3.2 oz., 80% of the meals), and the amount for the first three weeks was a still greater increase, 3.85 oz., 92% of the time. But as barley took the lead among the cereals, this seemingly high increase is not so high in value as the figures would indicate. The cereals were confined chiefly to the three that hitherto had kept the feces compact. Barley was used 38 times, farina 12, cream of wheat 11, rice 10, wheatena 9 (mostly before and after the feces were loose), hominy three times and shredded wheat once, the last meal of the month. Granulated sugar was used as before, 0.5 tsp. to a normal meal, and was reduced relatively to the size of a meal. Before the vomiting began about one egg a day was given, but none was given after that. Prunes, since they tended to loosen the feces, were almost entirely omitted for the month, only six being given. Zwiebach was the standard bread for the month, about one piece for each meal; for 10 meals it was used in the milk in place of a cereal. But little bread was given, one slice for each of 13 meals, because I was none too sure how bread was digesting. Ten times a

slice of dried bread was given; I was as sure of this digesting as of zwiebach. "Educator" crackers were used about 8 times, an average of $3\frac{1}{2}$ each time. Of the extra foods, macaroni cooked with beef was given 4 times, about 4 oz. each time; 1 tsp. of jelly once. Twice beef and barley soup were tried and once rice (3 oz.) cooked with chicken. The beef and barley soup was the only one of these extra foods about the digestibility of which I was not quite certain.

This was, then, largely a month of modifications, because the diet had to be confined to those foods that tend to make the feces compact. The average quantity, however, was equal to, or greater than, that of the previous month, but during the third week all the meals were reduced in quantity.

Orange and water were given when he awoke in the afternoon, averaging on 17 days 2 oz. of water a day, and on 22 days 1.8 oz. of orange juice. That night when he was vomiting he was very thirsty, and drank all I would give him. All but the last drink, the fourth one, was thrown up. On the following day he was still thirsty, so that in those two days he had about 37 oz. of water. These quantities were so unusual they have not been figured in the general average.

Medication. Four times a tsp. of castor oil was given—twenty-third month, second day; twenty-third month, first week, third day; twenty-third month, third week, first day and second day. The first time in order to break up a cold and to correct feces; the second time to clear out the intestines so that the feces would harden; the third time to carry off the trouble-maker after he had vomited. The last dose

was soon thrown up, and again, on the day following the vomiting, another tsp. was given, which was retained and which did help to clean out the intestines. Three times gray powder tablets were used. The first time, twenty-third week, second day, the feverishness disappeared after only one had been given, though, of course, this one pill had not been the cause of the fever's sudden disappearance. On another similar occasion two pills were given, after which the feverishness disappeared. This was on the night of the long vomiting. The third dose was given the day following the long vomiting, when I found his temperature to be 103° . Four pills were given that night, at 5 P. M., 10 P. M., 2 A. M. and 5 A. M., and were followed in the morning (twenty-third month, third week, third day) by two bad movements, evidently a final cleaning out of the intestines. To assist in relieving the intestinal trouble an enema was given at 8.30 A. M., following the first of these movements, and another at 10.30 A. M., after the second movement. Four sponge baths of alcohol and cold water were also given that night to reduce the fever. By the next morning the temperature was down to 99.7° ; by 4 o'clock P. M. he was hungry for food, and relished some zwiebach and dried bread. The temperature went up again toward evening to 100.4° , but by the next morning, twenty-third month, third week, fourth day, he was obviously so well that I did not take the temperature again.

4. *Vomiting.* This month contains a record of the worst vomiting of the baby's life so far. I believe it was caused by some bits of hominy that were not sufficiently broken up before entering the stomach (these pieces showed plainly in what was vomited).

He vomited eight times, one after the other, at intervals of a half-hour to an hour and a half. He began vomiting at 5.45 P. M. (twenty-third month, third week) and continued four times until 9 o'clock. Then only gastric juice came up. At 9.30 P. M. I gave castor oil with orange juice, but that was thrown up; then, as he was very thirsty, he had three drinks of water, about 4 oz. each, two of them cold and one warm (I did not know which I should have given, so I tried both), all of which he threw up. Finally, at about 3.30 A. M., he had another warm drink, which he retained. On the second day following he vomited about an ounce about two hours after a 5 o'clock breakfast of 1 oz. of milk, with lime water, and 2 oz. of barley. After that, all went well. Of course, his eye tooth may have been contributory to this upset.

5. *Sleep.* The sleep during the first three weeks averaged 60.4% of the total time (previous month 59%). The fact that only one day-time nap was omitted this month, as against five of the previous month helps to raise the percentage. The average for the entire month is still higher, 61.8%, because of the long and frequent naps after the vomiting spell. The night naps average 11.6 hours for the month, about the same as for the previous month, but the day naps increased from 2.8 hours to 3 hours, and only one nap was omitted throughout the month (when I tried again to break up the habit of sucking the thumb).

6. *Feces.* Out of 46 feces only 11 were perfect, of which 9 were caught in the chamber. Twenty-one others, of which 18 were caught in the chamber, were smooth, yellow and properly timed, but were loose, about like pancake batter rather than pasty, like

modeling clay. The cause may have been the excessive amount of milk, but I believe the teeth were primarily responsible. The baby had never had such a steady diet of constipating foods, and never such a series of loose feces. And tannic acid rubbed on the gums stopped his crying and fretting on several occasions. So, this time again, the cause of the trouble must be sought elsewhere than in the diet. Of the other feces, one, following the eating of rich chicken soup, was a very light bright yellow, and four, after eating prunes, were dark yellow. One curdled movement was possibly caused by boiled milk; two smooth and yellow, but watery ones, followed the vomiting; three curdled, greenish and loose ones followed the gray tablets, while three curdled ones may have been caused by the beef and barley soup.

7. *Skin.* There was no evidence of trouble in the skin, though I was expecting it during that vomiting period. The scalp still itched. Dr. McCastline advised liquid albolene, but it made the scalp itch worse, and I again resorted to olive oil, which was quieting.

8. *Cold.* The first three days of the month were the final days of a cold started during the previous month. During these days the preparation of albolene and menthol was used in the nose only once; mucol was sprayed seven times, and one tsp. castor oil and one gray powder tablet were given. Another cold of short duration (four days) began on twenty-third month, first week, fourth day, and for a part of the time was accompanied by a cough. The albolene and menthol preparation was dropped in the nose five times and mucol was sprayed four times. Camphorated oil broke up the cough when it first appeared, but when it came the second time, Dr.

McCastline advised a mustard plaster, to be held on the chest for a few minutes and to be followed, if necessary, by some tablets. Six of these tablets were given during the night as he coughed. These, with the mustard plaster, speedily suppressed the cold. With the movements affected and the teeth paining, it was urgent to get this cold out of the way in a hurry.

9. *Behavior.* The cause of his fretting or being easily annoyed could generally be traced to the cutting of teeth, though I did not always apply tannic acid. When I did, his attitude changed immediately. While he had a cold, and during those three days while the intestines and stomach were getting readjusted, he was also somewhat cross. The average for the first three weeks was 1.09, but was brought down to 1.1 by the upset of the third week.

10. *Crying.* Though he cried 81 minutes in all, 36 of these during the first three weeks, the reason was not far to seek. Of course, he cried while he was vomiting and having enemas and bad feces, which account for 45 minutes, and the teeth account for other tears, since, after tannic acid had been used, the tears stopped, and a cold, with a cough part of the time, accounts for the rest of his tears.

11. *Weight.* He weighed 27.8 lbs. in the middle of the month, but dropped to 27.1 lbs. during the upset. But even this was 1.1 lbs. heavier than the Holt average.

12. *Physical achievements.* Early in the month, as the cold was getting well, he learned to blow his nose and to spray it. (See p. 180, Plate III, No. 2.) On the twenty-third month, second week, fifth day, he walked down two flights of stairs, refusing my

proffered hand, but holding on to the banister. When I have put the drops of menthol and aboline in his nose I have generally asked another person to hold some absorbent cotton over his eyes to prevent the medicine from dropping in and smarting. But one day he and I were alone, so I asked him to hold the cotton over his own eyes, which he did most gladly, and his attitude changed from that of the rebellious, persecuted person to that of one assisting at an operation. I know from his behavior that the menthol smarted, but he did not cry. He likes to help do anything about the house, carry dishes to and from the dining-room, help (?) make beds, manipulate broom and sweeper, break up macaroni, and to do any little errand that a baby can do.

25. *Twenty-fifth Month, Third Week.*

The Last Month in Which Records Were Kept.

(See Chart XXV.)

1. BRIEF SUMMARY OF THE MONTH. I had intended to discontinue the baby's record when he reached two years of age. In fact, I did discontinue keeping the daily records for the first two weeks of the twenty-fifth month, but when I saw what a difference there was, particularly in the diet and physical achievements, after the last canine tooth appeared, I decided to begin again at the third week (twenty-fourth month, second week), and to record it and include it in the report. As there were practically no interruptions for the entire month, the record for the month is well represented by that week. The only thing to be mentioned as peculiar to the month is that cream and egg custard were added to the diet.

II. DETAILS. (See Chart XXV, p. 110.)

1. *Number of meals a day.* Three meals per day was continued as in the previous month.

2. *Intervals between meals.* There was little change in the intervals from the normal three-week period of the previous month. The long interval was 13.7 hours (previous month 13.6 hours), the morning interval 3.7 hours, a loss of about .3 an hour, which was partly made up by the increase of the afternoon period to 5.6 hours.

3. *Diet.* The menu for this week, as for the month, was varied and the food was plenty. To induce him to chew more and to make the diet richer, instead of putting the milk on the cereal, I poured about 1.3 oz. of milk over it, in order that he would not drink the milk so fast, and he also had milk separately with some zwiebach broken up in it. These changes he enjoyed. He also had a little of the beef with which the macaroni was cooked, and some unsweetened egg custard, cooked like dessert custard, but flavored with salt instead of vanilla and sugar. (Proportions: one egg broken in about 2 to 3 oz. milk and a pinch of salt.) Sweet chocolate (Baker's Caraccas), grated, also proved to be a delicious relish at the close of a meal. Of this he twice had about three-quarters teaspoonful. All these foods seemed to digest well. I think the cream kept the feces a little lighter in color and looser in texture.

Of the regular foods he had less milk than the previous month, $5\frac{7}{8}$ oz. four-fifths of the time (previous month 6.4 oz.), but I found that frequently when he had finished the cereal and cream for his breakfast he had had enough and did not care for the milk.



Fig. 20. Turning on the electric light. (Age, twenty-three months.)

25 th Month (3d Wk.)

Age 24 Mo.		24 M 2W.	24. 2-D.	24 M 2-2D	24 M 2-3D	24 M 2-4D	24 M 2-5D	24 M 2W 6D	Gen. Av.	
Meal time.		7:30 A.M. 12:30 P.M.	8:30 A.M. 1:00 P.M.	7:30 A.M. 1:00 P.M.	8:00 A.M. 1:00 P.M.	8:00 A.M. 1:00 P.M.	8:00 A.M. 1:00 P.M.	8:00 A.M. 1:00 P.M.	3 Meals a day	
Interval and Sleep between Meals. (Hrs.)		15 14 13 12 11 10 9 8 7 6 5 4 3 2 1							Night Int., 13.7 hrs. Morning " 4 1/8 " Afternoon " 5.6 " Asleep 60.9% of total time.	
Milk. (pasteurized) (oz.)		8 7 6 5 4 3 2 1							5 7/8 oz. Milk, 4/5 of the meals	
Cream. (oz.)		2							7 meals 1 1/3 oz. Cream	
Shredded Wheat, Wheatena, Oatmeal		5 4 3 2 1	OW	W	O	SW	SW	O	3 1/2 oz. Cereal 4/5 of the meals	
Rice Hominy (oz.)		4							1/2 tsp. qz. sugar	
Gran. Sugar (tsp.)		1							4 meals 3 3/4 oz. macaroni	
Macaroni cooked with beef. (oz.)		4 3 2 1							1/2 oz. beef. small.	
Beef. (oz.)		1							2 meals, 3 oz. egg custard.	
Egg custard. (oz.) (unsweetened)		3 2 1							3 meals, 2 1/3 prunes	
Prunes		1							6 meals, 1 1/2 Bp. jelly	
Jelly. (tsp.)		1							11 meals, 1 1/2 Bp.	
Zwiebach		2							9 meals, 1/2 slice brd.	
Bread (slice)		2							twice, 3 1/2 tsp. Swiss.	
Sweet chocolate grated (tsp.)		1							Orange j. 2 oz. a day.	
Orange juice		4 3 2 1	To	To	To	To	To	To	Prune j. 2 oz. in all.	
Prune juice		1							Water, 4 1/2 oz. a day	
Water. (oz.)		1							Feces 1 in 18 2/3 hrs	
Feces			SY	SY	SY	SY	SY	SY	Behavior	
Behavior										

Chart XXV. This, with the seventh and the twenty-first months, are obviously the red-letter months of his early life. It was during the periods of regular living, of which these months are the best examples, that the finest all-round progress came in his life.

Again, for lunch, macaroni or egg custard were so hearty that there was little desire for milk. Of the cereals used, shredded wheat and wheatena take the lead, each being used five times, followed by oatmeal thrice, rice twice and hominy once. (Barley and farina were not used at all this week.) A quarter tsp. of sugar was sprinkled over the cereal as usual. About 4 oz. of macaroni, cooked in the water with a pot roast of beef, was given for four dinners, and for one dinner wheatena was warmed up in very thin beef gravy. Prunes or jelly mixed with zwiebach crumbs made good desserts (an average of two and two-thirds prunes, three times, and 1.5 tsp. jelly, six times). Zwiebach was served as a carrier for milk and prunes and jelly in about half of the meals; a half slice of bread was eaten at nine meals.

No modifications had to be made to correct disturbances.

To induce him to drink more water, I sometimes added prune juice to it. If he did not care to drink it at first, I would set it down on a low table within his reach, and he would take a swallow every now and then. He drank about 2 oz. of orange juice and 4.5 oz. of water a day, and about 2 oz. of prune juice a week.

4. *Vomiting.* None for the month.

5. *Sleep.* He slept 61% of the entire time, substantially the same as the previous month. The night nap averaged 12 hours, 0.4 hour longer than the previous month, and the day nap, 2.50 hours, a little less than the previous month (2.75 hours). No naps were omitted.

6. *Feces.* The average interval for the feces was 18.6 hours. Of the nine feces for the week, all were

done in the chamber, seven were perfect and two were only slightly loose—not sufficiently so, to require any change in the diet.

7. *Skin.* The skin was perfect throughout. Resorcin is finally putting the scalp in perfect condition.

8. *Cold.* None for the week.

9. *Behavior.* A series of perfect days give the average of 1 for the week.

10. *Crying.* None for the week or month.

11. *Weight.* He weighed 28 lbs., 2 lbs. above the Holt average.

12. *Physical achievements.* With the pressure of a cutting tooth removed, he is more keen and active. He assists himself in various ways in the toilet-room. At times, he still refuses my help when going up and down stairs, but most always does accept it on the street. He likes to take my hand as an equal, but not as a dependent. He never walks or loiters when doing an errand for me, but always runs. He walks on all fours with the knee-joint straight. He investigates everything he can reach. In the street, for instance, he fusses about the water hydrant, apparently trying to find a combination that will do something. He still finds new things to operate on the typewriter, and spends much time there, working various mechanisms. He has not yet in any way injured it. He pulls the dumbwaiter up and down. This is splendid exercise for him. It is just heavy enough to demand all his energy. He seems quite as conscious as we of the dangers involved. (Of course, we never let him pull it unless one of us

is there by him.) One day he walked three-quarters of a mile in an hour. I had difficulty in getting him to move on, for there was always something he wanted to investigate; but by resorting to playing horse, to chasing him, to giving him toys on strings to pull along, and so on, I managed to go from the house in the middle of the block on 114th street, near Riverside Drive, and along the Drive to the bridge at 127th street. And he was not tired out, for he rebelled when I put him in the carriage at that point to take him home. He runs faster than ever, and turns the sharp corner in the hall with considerable dexterity. We play a new game of hide-and-go-seek. At night we turn out the electric light, go away from him and call to him. Guided by our voices, he feels his way silently and slowly through the dark until he finds us. Then the light is turned on and we have a good laugh over the adventure. But out it goes again, and again he follows the voice, and so on. We stumbled upon this game by chance, but think it one of the best we play. He revels over the discovery in the dark, and it is such a natural way of accustoming him to darkness. He throws the ball very well. Taking hold of his mother's hands, he climbs up her body until he stands on her shoulders. All activities are performed with greater facility.

13. *Teeth.* Last canine tooth through; first 16 teeth all through.

14. *Remarks.* The thumb-sucking habit is not gone, but is weakening. He has gone to sleep several times without the thumb in his mouth, and does not resent my taking it out after he has fallen asleep, so

we are making progress there. He seems so reasonable about so many things that I am hoping his sensibleness will help out in the breaking up of this habit. He is wearing drawers and going to bed without a diaper. He asks now to go to the toilet, and can wait until he gets there.

CHAPTER III.

SUMMARIES.

1. *Number of meals a day.* (See Chart XXVI, 1.) The number of meals a day began with 10 and gradually diminished to three at the age of two. The reduction was slow and three times was interrupted, but throughout the principle was to keep the interval as regular and as long as possible, consistent with the baby's appetite and other evidences of health.

Leonard was started with the hospital regulation, 10 feedings a day (24 hours). But as this seemed to give him more food than he could retain, meals were omitted as frequently as he seemed disinclined to take them, until by the end of the second month the number of meals was reduced to about six or seven a day. Thereafter the reduction continued very slowly, until by the end of the fifth month it was six meals a day, given at approximately 6 A. M., 9 A. M., 12 M., 3 P. M., 6 P. M., with either another evening meal or an early morning meal. But during the following month (sixth), however, I found his hunger demanded a late evening meal again, so that an average of between seven and eight meals was reached. Then for two months, seventh and eighth, the average went down again to between five and six

Summaries Tabulated.

CHART XXVI.

meals, only to rise during the following (ninth) month, when a late evening meal had frequently to be given, since otherwise he would wake hungry very early in the morning. This increased the average to six meals a day. During the three following months (tenth, eleventh and twelfth) there was another steady decrease, until by the thirteenth month only four meals a day were given (at about 6 A. M., 10 A. M., 2 P. M. and 6 P. M.). This was followed by a slight increase with the re-introduction of the late evening meal, bringing the average back to five meals a day on the fourteenth month and remaining there for two months (fifteenth and sixteenth). Then (seventeenth month), the night meal was finally omitted, leaving four meals a day, and the decrease continued steadily, omitting gradually the afternoon meal at 3 o'clock, until by the twenty-fourth month

Chart XXVI. 1. He began at the hospital with ten meals a day. At the dictates of hunger, gradually eliminating meals, by two years of age he was satisfied with three meals a day.

2. The night intervals in the two years gradually passed from six hours to twelve hours, while the day intervals went from two hours to four hours. And when three meals became the habit, an afternoon period of about five and a half hours was introduced.
3. The time spent at the breast while nursing went from twenty minutes to as few as seven minutes, and then back to fourteen minutes. The actual time nursing began with twenty minutes, was gradually reduced to three and a half minutes, and ended with twelve minutes a meal.

He began in the ninth month with six and a half ounces of food a meal, which amount was gradually increased to about ten or eleven ounces by the second year.

Water was given from the beginning, but was not recorded until the fifth month. The quantities varied from 1 to 4.3 ounces a day.

Orange juice was begun in the eleventh month, and from

three meals a day became the habit—breakfast, 8 A. M., dinner, 12 M., supper, 6 P. M.

During the twenty-second month there was an abnormal period of about three weeks, when fewer meals were given. The continuous line (see Chart XXVI, 1) is the average of the actual intervals; the dotted line is the average during the fourth week, when the baby was well.

Orange juice and water were at first given (sixth month) about 9 o'clock in the morning, two hours after the previous meal and an hour before the following meal; but when the afternoon meal was omitted the orange juice and water was given at that time. Otherwise there was no food except "educators," on certain occasions (see p. 122), given between meals.

2. *Intervals between meals.* (See Chart XXVI,

an ounce to two ounces were given frequently through the month.

4. He regurgitated from $\frac{1}{4}$ to $1\frac{1}{2}$ tbs. at from 2 to 85 times a month during the first ten months. The vomiting varied from none at all during five months to small amounts, $\frac{1}{2}$ to $\frac{2}{3}$ tbs., during 15 months, and four times, quite large amounts, from 1 to 12 tbs.
5. He slept from 75 per cent. of the time to 54 per cent. (in the ninth month) to 60 per cent. at two years.
6. The interval between the feces went from 9 hours at the hospital to between 24 and 36 hours during weaning days, and then from $12\frac{1}{8}$ hours to 22 hours.
9. Behavior varied from 1 (excellent) to 1.5 (half-way between excellent and good).
10. During one month, his crying averaged 37 minutes a day, and during another 23 minutes a day. Through 14 months it amounted to between 1 and 10 minutes a day, and through 7 months less than a minute a day, and for one month not at all.

2.) For 22 months there was a long night period and short day periods. For the twenty-third, twenty-fourth and twenty-fifth months, when the 3 o'clock, afternoon, meal was omitted, a third interval was made, longer than the previous day interval and shorter than the long night interval, so that it introduced a new group. (See Chart XXVI, 2.)

The *long, or night period*, was begun at the hospital with an interval of six hours (10.30 P. M. to 4.30 A. M.), but on reaching home, as the baby seemed hungry before the regular time, the discipline was relaxed, shortening the average to $5\frac{2}{3}$ hours for the second month. Three times—first during the sixth month, again through the eighth and ninth months, and finally from the twelfth through the sixteenth months—I had to replace the meals I was trying to eliminate, so that the increase of the long interval was checked at these periods. But after the seventeenth month there was no more check, rather, on the whole, a steady lengthening of the night interval from 13 to $13\frac{3}{4}$ hours. During the twenty-second and twenty-fourth months the interval was about 14 and $14\frac{1}{2}$ hours, respectively, but these high averages were brought up by abnormal periods when his appetite was not keen. The average for the normal weeks of these months was, in both cases, about $13\frac{1}{2}$ hours.

The *short interval* began at the hospital with two hours, but soon, second month, was increased to $3\frac{3}{4}$ hours, then it returned to about 3 hours for the remainder of the first nine months. With the introduction of the artificial food (tenth month), probably because he was getting more nourishment, the period increased to, and remained a little less than, 4 hours.

Once (nineteenth month) it was 4 hours, and once (twenty-fifth month) $4\frac{1}{8}$ hours.

By the twenty-third month he was quite content to omit the afternoon meal, and the interval between his lunch, at noon and supper was 6.5 hours, twenty-third month, to about 5.5 hours, twenty-fifth month.

3. *Diet.* (See Chart XXVI, 3.)

(A) *Length of time nursing.* For the first 8.5 months the baby's diet consisted exclusively of breast milk and water (see below under "water"). The quantity of milk given was determined by his capacity to retain and digest it. I began by keeping him at the breast for 20 minutes, the hospital regulation, but I soon found he got enough in less time. To insure his not eating too fast, I began by making him rest at intervals equal to the time spent in nursing, so that he would nurse only half of his feeding time. By the sixth month the rest time was shortened proportionately to the feeding time, and continued to be relatively shortened through the nursing period. The length of time nursing decreased rapidly through the first two months, then slowly through the next three months. The shortest average period was 3.5 minutes (fifth month). Then, whether because the milk flowed less freely or the baby demanded more, or was able to retain more, the amount increased steadily until the end of the tenth month, when 12 out of the 14 minutes at the breast was the average time nursing.

(B) *Foods.* (a) *Quantity.* During the ninth month, while still nursing, artificial food was introduced. As to the quantity (see Chart XXVI, 3), he began with an average of 6.5 oz. a meal, one meal a day. The number of these meals was gradually in-

creased, while the number of breast meals decreased, until, toward the end of the tenth month, the breast meals were finally omitted. There was a drop from 6.5 to 6.3 oz. the following month, but thence to the seventeenth month there was a steady increase in amount. Then, as more solid food was used, the quantity remained around 11 and 12 oz. through the rest of the second year. (The one drop to 9 oz., twenty-second month, was during a time when he had a cold and fever, painful teeth and was not hungry, but the average during the normal period of that month was 11.8 oz.)

(b) Composition. Chart XXVII shows what foods were introduced and when, and suggests to what extent they were used; that is, if the food was given more or less throughout the month, the line is continuous, but if only for a week or a few days, the length of the line is proportionately as long as the number of days it was used.

The foods which Holt or other authorities have recommended were given in small quantities, one at a time, and results noted (for disturbances see Chart XXVIII, 2). Then, according as the evidences were favorable or unfavorable, greater or less quantities were tried, or the food was omitted for a while, to be tried again later. In this way he was introduced to milk, bread, cereals, fruit and meat (though very little of the last), and these constituted his diet for the first two years.

Milk. He began (ninth month) with 10% *certified milk* (Sheffield Farms), to which milk-sugar, lime water and boiled water were added, and in the following six days gradually passed to 7% milk, which was used for the following three months. During the

thirteenth month the transition was very gradually made to 4% milk, and by the fourteenth month he was digesting straight certified milk. The change was then made to *pasteurized milk*, which he continued to use through the twenty-fifth month, excepting for a few days (twenty-third month), when *sterilized milk* was tried, with unsatisfactory results. *Condensed milk* was used during a few emergencies (twenty-third and twenty-fourth months), when there was no other milk in the house. During the twenty-fifth month *cream* was given with the cereal (it proved to be too rich, and had to be discontinued).

Lime-water was added to the milk at the beginning (ninth month), and was discontinued after the fifteenth month, except for a short period during the twenty-fourth month, when teething upset his digestion.

Sugar. At Dr. McCastline's advice *milk-sugar* was used into the twentieth month and *granulated sugar* thereafter. (Granulated sugar had been tried in the fourteenth month, and I noted no difference in results.)

Bread. The first solid food he had was home-made bread during the thirteenth month, thoroughly dried out in the oven, crisp and hard. The following month (fourteenth) Calhoun's unsweetened *Zwieback* took its place, and was used thenceforth with but few intermissions. *Crusts* of bread, without being dried, were also used, but less than the *zwieback*. If the feces were inclined to be disturbed, that is, in any way but constipated, *zwieback* took preference over bread. He also had a little *toast* (twenty-third month).

Crackers. At intervals he had *Educator crackers*.

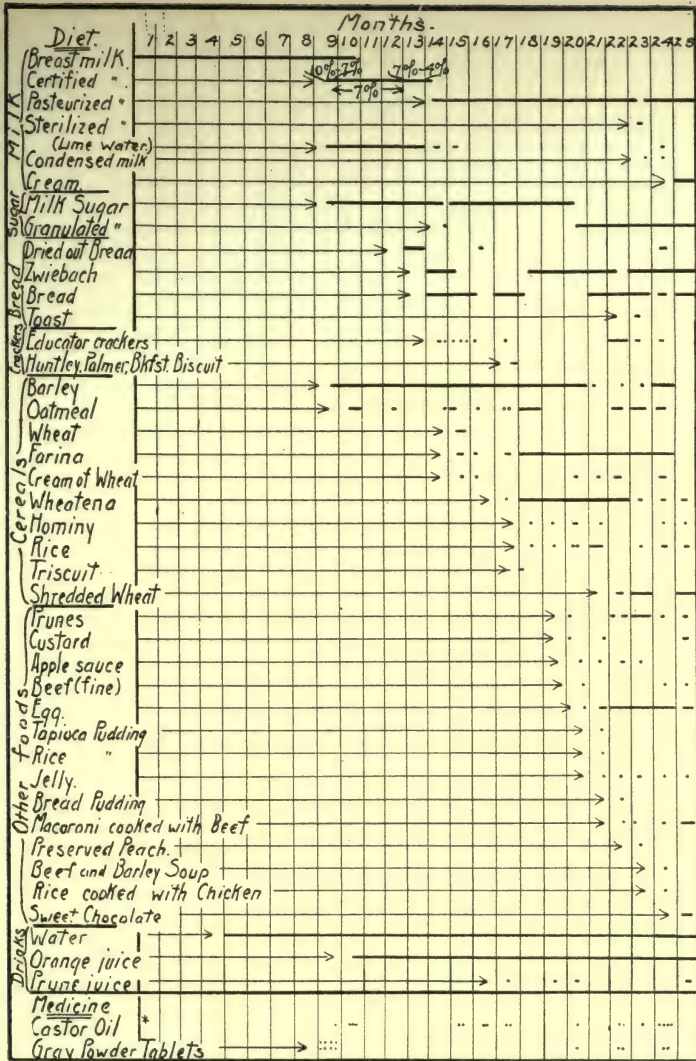


Chart XXVII.

Note.—Breast milk feedings continued with other milk.

The slow change from 10% to 7% to 4% milk.

The quick return to Pasteurized milk after a short unsuccessful trial of sterilized milk.

No difference noted in the use of milk sugar and granulated sugar.

Variety of cereals, of which Barley, Farina and Wheatena were the favorites.

Egg a good stand-by.

Macaroni cooked with beef a favorite.

Sweet chocolate (Baker's Caracas) well liked.

Water and orange juice welcomed regularly.

Aside from 16 tbs. of castor oil, in the two years, only one full dose of medicine was given (8 gray powder tablets, a doctor's prescription).

When trying to omit a meal, or when the quantity of food was reduced because of intestinal disturbances, and Leonard would be hungry before meal time, I found that a few crackers would often satisfy him. But at no other times did he have them between meals. *Huntley and Palmer's Breakfast Biscuit* were delicious, but expensive.

Cereals. *Robinson's Prepared Barley* was the "old reliable" cereal from the ninth through the twentieth months, and even after that time it had to be resorted to occasionally, as during the twenty-fourth month, when a difficult tooth was erupting, making the movements loose. At first the barley was prepared very thin as a gruel (1 tbs. (rounded) to 1 pt. water), but gradually it was made thicker, until it was of the consistency of stiff jelly (2 tbs. to 1 pt. water). When introducing a new cereal I mix it with a little barley for the first few times.

Farina, introduced in the fifteenth month, gradually displaced barley as the most easily digested cereal, and it was used, as barley had been, as a basis for introducing other new cereals.

Cream of wheat proved good, but was not used as much as farina.

Prepared wheat flour was also good, but, for no particular reason, was dropped after a first trial.

Oatmeal tended to make the feces loose, and was resorted to when necessary for that purpose. Several attempts, beginning during the tenth month, were made to introduce it, but a few consecutive meals of it always resulted disastrously, and it had to be given at long intervals, in alternation with other, more constipating foods. I persisted with

oatmeal to make the diet more varied; finally it was handled well.

Wheatena, tried first with barley in the seventeenth month, was easily digested, and I noticed that it frequently brought the color to his cheeks. It loosened up the feces, though not so much as oatmeal. It was successful when alternated with cream of wheat or farina.

Hominy, introduced in the eighteenth month, had to be used very sparingly. I believe it caused one very bad attack of indigestion, but that may have been because it was warmed over and not broken up fine enough so that too large pieces were swallowed whole without chewing.

Rice, started in the eighteenth month, was a reliable food and easily digested, though tending to be constipating.

Shredded wheat was a favorite from the time of its introduction (twenty-second month). The intestines handled it with about the same results as wheatena, only the shredded wheat was a little less loosening.

Triscuit, too, was tried (eighteenth month), and its effects were like those of shredded wheat.

Fruits. Prunes and apple sauce (from the twentieth month on), apple jelly (twenty-first month) and stewed peaches (twenty-third month) all digested well. The fruits, especially prunes, tended to make the feces less compact. They were sometimes served with broken-up crumbs of zwiebach.

Puddings. Custard (twentieth month), tapioca, rice puddings (twenty-first month) and bread pudding were all easily digested.

Eggs. After the twentieth month he handled eggs

well. They were cooked by standing in hot water until coagulated (about five minutes), then served on hot rice, hominy or shredded wheat.

Beef, chopped fine (after the twentieth month), was not a favorite, nor did it prove very digestible. Probably he did not chew it fine enough.

Macaroni cooked with beef, given after the twenty-second month, was well liked and well digested; it served, in alternation with egg, as a dinner dish. Beef cooked in this way, long and slowly in a fireless cooker, was readily digested.

Rice cooked with chicken (twenty-fourth month) was a favorite dish.

Beef and barley soup (twenty-fourth month) was enjoyed, but I was not sure as to how it digested.

Baker's sweet chocolate (twenty-fifth month), given at the close of dinner, proved both palatable and digestible.

The following foods digested perfectly well, but happened to be given only once or twice, though there was no obvious reason why they should not have been eaten more freely:

White grapes (twentieth month, twenty-second month).

Japanese rice cakes (twenty-first month).

Apple tapioca (twenty-second month).

Grape juice, unfermented (twenty-second month).

Sweet potato (twenty-second month).

On the other hand, the following foods either did not agree with him or he did not like them:

Beef juice was tried three times (nineteenth month), but not liked.

Mutton broth was tried three times (twenty-

second month), but not liked, and as Dr. McCastline said he did not seem to be in need of such food, I did not further urge him to eat it.

Celery (twenty-third month) was badly digested.

Chicken soup (twenty-third month) was apparently too rich. It made the feces a very bright yellow.

Dr. Thomas' uncooked bread (twentieth month) was tasted while a friend was eating some, but in about 12 hours the feces were very loose. However much some people may be benefited by this bread, evidently Leonard did not need it.

Soap and raw beef (thirteenth month), to which the lad had helped himself in an unguarded moment, and which did not digest well.

(C) *Liquids*. (See Charts XXVI, 3, and XXVII.)

I did not begin to note the quantity of *water* given until the fifth month. From the fifth month to the tenth month the average was 2 oz. a day, varying from 1.25 to 2.5 oz. From the eleventh to the twenty-second month the average was 3.75 oz. a day, varying from 2 to 4.3 oz. During the twenty-third month there was a decided lessening in amount; he drank only 10.5 oz. during the entire month. He did not seem to care for it. The next month was again exceptional, but in the other way. On two days he drank about 37 oz. This excessive amount was taken to clean out the stomach after an attack of vomiting. On 17 other days of that month, however, an average of 2 oz. were taken. The twenty-fifth month was normal again, averaging 4.5 oz. daily.

Orange juice. (See Charts XXVI, 3, and XXVII.) He began having orange juice during the eleventh month. Thence through the sixteenth month he had about an ounce at a time, though not every day—only about a third of the time. Several times I discontinued the orange juice when I feared it might be causing trouble, though I never could prove that it did. From the seventeenth to the twentieth months 1.5 oz. a day for about two-thirds of the time, and from the twenty-first to the twenty-fifth months 2 oz. a day for about two-thirds of the time, were given.

The orange juice and water were always given between meals, about two hours after the previous meal and an hour before the following meal, when the meals were three hours apart. At first they were given in the morning, later in the afternoon.

Prune juice. (See Chart XXVII.) After the fifteenth month diluted prune juice was given only 16 times in all, about an ounce each time, in place of the orange juice for that day.

(D) *Medication.* (See Chart XXVII.) Ten minims of castor oil and 5 minims of syrup of rhubarb, given at the hospital, together with 16 tsp. of castor oil and 13 gray-powder tablets, given at home, are all the medicine he took during these first two years; of the latter only one full dose (8 tablets) was given.

4. (A) *Regurgitation.* (See Chart XXVI, 4a.) I know that the peristaltic movement of the alimentary canal and careless handling of the baby directly after feeding are two causes of regurgitation, and that regurgitation does not necessarily indicate that the food has been indigestible or excessive. Yet, by actual experience, I found that he did have enough

when he began to regurgitate. It looked as if the amount regurgitated indicated the excess over his needs.

He regurgitated only during the first 10 months. The amount was greatest during the second month, about 60 tbs. in all, and was followed by generally decreasing amounts through the 10th month, being interrupted only twice (fifth and tenth months) by slight increases.

(B) *Vomiting*. (See Chart XXVI, 4b.) There was a steady increase of vomiting through the sixth month, when a total of 45 tbs. was reached. The seventh month dropped to 25 tbs., and during the following six months the amount was from 2.3 to 6 tbs. a month. After this, six of the months were free from vomiting. During four months it was from 2 to 5 tbs., and one month was 18 tbs. The worst month was the twenty-fourth, when a severe attack of vomiting brought the amount up to about 96 tbs. There were three bad attacks of vomiting, one each during the fifteenth, the nineteenth and the twenty-fourth month, when the stomach seemed to empty itself completely. The first attack may possibly have been due to sour barley, though it did not taste sour to me. I was unable to locate a cause for the second; hominy may have caused the third attack. All three may, however, have been caused by teething. A fast, followed by a diet of the most easily digested food, given in small quantities, was the treatment that followed these three attacks. Otherwise, the vomiting was slight. As in the case of regurgitations, vomiting was a warning to question the quantity and quality of the food.

5. *Sleep*. (See Chart XXVI, 5.) In sleep, too,

were to be found indications of the baby's physical condition. Intestinal pain, cold, hunger, thirst and toothache all have disturbed his slumbers.

The total time spent asleep averaged during the first five months 73%, during the next seven months 56%, and during the second year about 60%. Incidentally I might say he was never rocked to sleep, but was put in his bed and left alone. During the seventh month I noted on six different occasions that he cried when he was put down to go to sleep, twice for 15 minutes, four times for 5 minutes. As there seemed at the time to be nothing else to make him cry, and as he soon stopped when no attention was paid to him, I concluded that he was crying merely for personal attention. (See Charts VII and VIII, "F.") Of course, he did not get the attention, so he soon gave up crying for it.

I have made no separate table showing when his sleep occurred, but it is noted on each of the monthly charts by the line at the right of the interval line. He began by sleeping after every feeding, and the charts show that during the entire third month there were only six times when he did not sleep after nursing. By the fifth month he remained awake for an average of one interval a day—the late afternoon period. Naps were gradually omitted between day meals, until, by the eleventh month, he was taking only the long night sleep and one day nap in the afternoon, and this continued to be the rule through the second year.

6. *Feces*. (See Chart XXVI, 6.)

(A) *Frequency*. Provided that the feces remained normal, the interval between them did not of itself seem to offer *in this particular case* any evi-

Chart XXVIII. In part 1 are recorded the character of the feces. If the feces were not perfect, in some cases, I could guess what caused the trouble. These supposed causes are recorded in part 2, and the remedies for the trouble in part 3. For instance, in the column under slightly loose, SY (1), I pick out several times as causes oatmeal, teething, excessive milk. Running down same column to part 3, where the remedies are suggested, I see in the corresponding spaces (numbered by months) for "oatmeal," "return to barley"; for "excessive milk," "milk reduced"; for "teething," "food reduced and diluted, barley, farina, cream of wheat and zwiebach" given. In the same way for the slightly constipated feces, SY(c) I note that excessive food and excessive barley were suggested as the cause, and that the quantity of food was reduced and oatmeal was given.

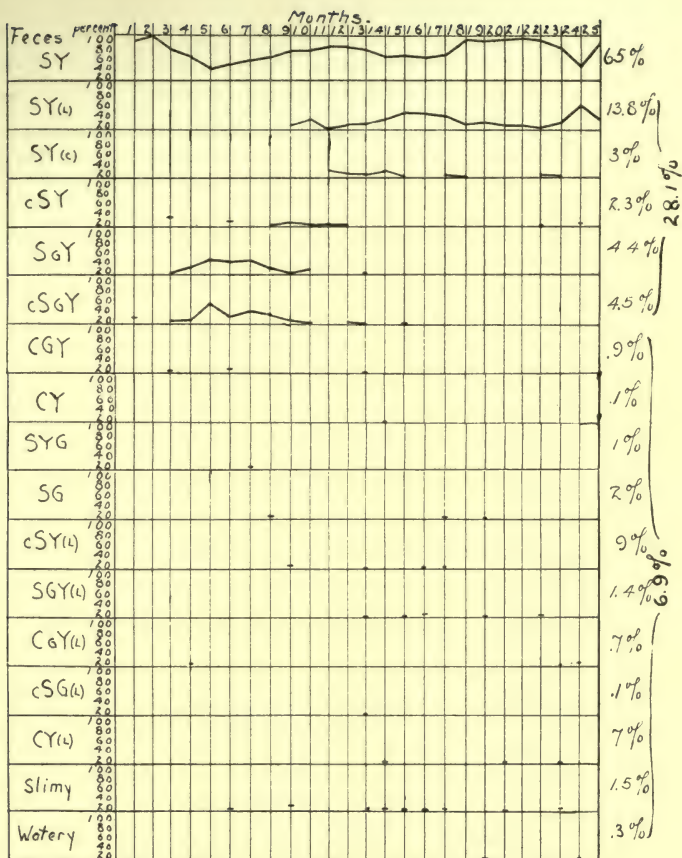


Chart XXIX. Note the high percentage (65%) of perfect feces, and in 28% more the disturbances were only slight. Practically only 7% were bad, and, computing from other data, nearly half of these came after castor oil or gray powder tablets had been given.

dence of trouble, unless it was that the too frequent feces meant too much food. Once a feces which came after a period of 50 hours (twenty-second week, first day) was pronounced perfect by a physician. Another time after 70 hours (twenty-seventh week, fourth day) a perfect feces came, and there have been other long periods, over 24 hours, followed by good feces. Or, again, there have been as many as three or four small movements a day; but if all were good, and were at the same time unaccompanied by any evidence of indigestion, no change was made in the diet. The average time-interval for the feces during the two years has been 21 hours.

To start a desire to evacuate, particularly if it were time for a movement, I have sometimes used soap suppositories.

The interval between the feces was shortest during the first month, 9 hours. Then for the following 8 months the interval was longest, ranging from 24 hours to 36 hours, averaging one in 28 hours. For the following three months (ninth, tenth and eleventh), when the weaning began and the new food was being introduced, the average interval was less, $19\frac{1}{3}$ hours, and it was still less for the remainder of the 25 months, ranging from 12 hours to 20 hours, and averaging about 16 hours.

(B) *Character.* Sometimes the mouth and stomach would pass food that the intestines could not handle successfully. The feces then furnished another check to the diet. What has seemed to me to be a normal feces in this case, and therefore a reliable evidence that all the food was thoroughly digested, had the following characteristics: In color it was a dull yellow, light at first, growing darker as more

solid foods were taken;* in texture it was smooth like thick cream or soft mud, but not like pot cheese, broken up into curds; in consistency, at first it was as thin as cream, but later more like thin paste or like modeling clay. I noticed also that in the same feces the color and consistency would frequently vary. The first part of the feces to leave the rectum would sometimes be darker, more compact and sometimes folded, or rarely separated into balls, whereas the last would be lighter, less compact and unfolded, but this variation, I was told, was no evidence of indigestion so long as all was smooth. The explanation was that the longer the feces remained in the rectum, the darker and more compact, or dryer, it became. As to the odor, in the earlier months it somewhat resembled that of lima-bean soup; later it was stronger, quite characteristic, but not offensive.

In the abnormal feces these elements were modified little or much, according to the character of the disturbance. The only changes in the color that I noted were a bright yellow, caused, so the doctors consulted told me, by excessive fat in the formula, a matter easily corrected, and a modification of the yellow by green, varying from the slightest amount of green in the yellow to an excessive amount that

*Incidentally, I should like to suggest that the following contribution to the science of baby culture might be of value: namely, records from which charts would later be made of the colors of the feces, both normal and abnormal. That a mother should be shown what to expect in this matter is, I believe, quite as important as that she should know what to expect in the matter of weight and growth generally. In fact, who knows but it may be more important as a guide in feeding than the tables of weight? I noted the changes in color by certain letters, but a color chart of colored papers or paint would have made the record more accurate, and in preparing a chart as a guide would tell the story better.

		Fe	Mn	As	Mg	Je	Sy	Ag	Sg	Oc	Na	De	Ja	Fe	Mn	As	Mg	Je	Sy	Ag	Sg	Oc	Na	De	Ja	Fe										
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25										
8	Cold { head chest Total no. days of																																			
Treatment {	Local. (Chest, Head)	General	Diet Food fed. (only)	Barley	Castor oil	Squid bow, talc (Mustard bath)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓											
																										Muscol spray	Menthyl Alb. drops	Camph oil (Chest)	Must plaster (")	Benzoline inhaled	Vaseline					
																																✓	✓	✓	✓	✓

Chart XXXI. Counting the duration of a cold from its first indication to its complete absence, his colds lasted 61 days in all; 57 of these days were in the winter and came after the steam heat was turned on. The use of mucol and menthol and albolene were found to be excellent in breaking up a cold. The diet, too, at these times was carefully prescribed and intestines were kept in good condition.

made it a yellowish green. This green always aroused my suspicions that something too difficult to digest had been eaten, and since only one new thing was introduced at a time, I could generally locate the disturbing element at once and omit it for the next meal or meals. During the nursing period I sometimes thought I could trace the disturbance to what I had eaten.

When the texture was changed by being badly curdled or slimy, it was corrected by modifying the food, generally radical. The feces were slimy 14 times, but six of these were after castor oil had been taken. Sometimes the consistency was modified by becoming either watery (loose) or else very compact (constipated). There was little variation in this respect while nursing. Later barley and zwiebach tended to correct the loose feces; oatmeal and wheaten a the constipated one. If nothing else interfered, a diet compounded of these foods kept the feces about normal.

While the teeth were working their way through the feces were repeatedly made loose.

All disturbances were accompanied by offensive smells.

Chart XXIX summarizes clearly the character of the feces and shows that the perfect feces (SY, smooth, yellow, first row) were in excess (65%) of the irregular ones. The next largest group, 13.8%—SY (1), smooth, yellow, but a trifle loose—were those that were slightly loose, but otherwise were perfect. They began with the introduction of artificial milk (between the ninth and tenth months), and teething also kept some of the feces loose. Another group of 3%—SY (c), smooth, yellow, but slightly consti-

pated—were slightly constipated, but otherwise normal. Then follows a group of three (cSY, slightly curdled and yellow, 2.3% ; SgY, smooth, but the yellow slightly greenish, 4.4%, and cSgY, both slightly curdled and greenish, 4.5%, in all 11.2%, which were either slightly curdled or slightly greenish, or a little of both. These slight irregularities appeared in 28% of all movements. Added to the 65 per cent. of perfect feces, there remain about 7% of the feces that were more than slightly curdled or greenish, or were also loose, or even watery or slimy. (This does not include the feces from the third to the seventh weeks, during which time no record was kept.)

What I thought caused these irregularities, and what was done to correct them, Chart XXVIII, 1, 2 and 3, show. The following is a summary of this chart:

(C.) Causes of Irregularities and Remedies.

I. Before Weaning (First Month to Eighth Month).

During the first eight months, not including a period of about six weeks, during which time no records were kept, there were 180 evacuations, of which 83 were imperfect (see Chart XXXV), and of these latter 22 were accounted for by the following things which I ate, and the following remedies (see Chart XXXVI) were applied to correct these disturbances:

*Character of Feces and Cause of Trouble.**Remedied by My*

*1 cSY, apple sauce I had eaten.

1 cSY, tomatoes I had eaten.

1 cSgY, peaches I had eaten.

2 cSgY, tart prunes I had eaten.

8 { 4 cSgY
4 SgY excessive olive oil I had eaten.

5 { 3 SgY
2 cSgY excessive cream I had eaten.

4 { 2 SgY
2 cSgY excessive cornmeal I had eaten.

Omitting apple sauce.

" tomatoes.

" peaches.

" tart prunes.

Eating less olive oil.

" " cream.

" " cornmeal.

II. During the Weaning Period (Ninth Month to Tenth Month).

During the ninth and tenth months, when the baby was having both breast and bottle foods, there were 93 feces, of which 34 were imperfect. Of these latter 17 were accounted for as shown below, and the following remedies were applied:

*Character of Feces and Cause of Trouble.**Remedy.**(a) Mother's milk.*

1 SgY, peaches I had eaten.

Mother omitted peaches.

(b) Other food.

1 SY (1), excessive food.

He omitted one meal.

4 { 3 SGY excessive
1 CgY (1) milk.

Plain barley and castor oil.

3 Slimy, too little barley.

{ Castor oil and gray pwd. tab.
Plain barley.
A fast.
Breast meals.

8 { 2 SY (L)
5 SY (1)
1 SgY (1) } castor oil and gr. pwd.

{ Discontinue castor oil and
gray pwd. tab.

*For abbreviations used, see p. 15.

III. From the Eleventh Month to the Twenty-fifth Month.

From the time when the baby was weaned (the eleventh month) until the twenty-fifth month (over two years), there were 639

evacuations, of which 202 were imperfect. Of these latter, 127 were accounted for and remedied as follows:

Character of Feces and Cause of Trouble.

- 35 SY (1), teething.
- 9 SY (1), oatmeal.
- 4 SY (1), wheaten.
- 1 SY (1), shredded wheat and wheaten.
- 2 SY (1), Dr. Thomas' uncooked bread.
- 3 SY (c), farina.
- 1 SY (c), barley.
- 20 $\left\{ \begin{array}{l} 2 \text{ cSgY} \\ 6 \text{ SgY (1)} \\ 6 \text{ Slimy} \end{array} \right\}$ castor oil.
- 2 CgY
- 1 CY (1)
- 1 cSY, castor oil & gr. pwd.
- 2 CgY (1), castor oil.
- 7 SY (1)
- 14 $\left\{ \begin{array}{l} 2 \text{ SY (c)} \\ 5 \text{ SgY (1)} \end{array} \right\}$ excess. food.
- 8 SY (1)
- 1 SgY
- 2 CY (1)
- 1 Slimy
- 1 cSY (1)
- 14 $\left\{ \begin{array}{l} 1 \text{ cSY} \\ 1 \text{ CgY (1) sterilized milk.} \\ 1 \text{ Boiled milk. CY (1).} \end{array} \right\}$ excess. milk.
- 5 Straight milk, excessive food or orange.
- 3 Celery, bread or milk.
- 2 cSY, Beef.
- 4 SY (1), sour barley. (?)
- 1 SgY, peach juice.
- 3 Watery after vomiting.
- 4 $\left\{ \begin{array}{l} 2 \text{ SY (1)} \\ 1 \text{ cSgY} \\ 1 \text{ cSG (1)} \end{array} \right\}$ soap or beef.

Remedy.

- $\left\{ \begin{array}{l} \text{Foods tending to constipate} \\ \text{used chiefly, but food also} \\ \text{reduced and diluted.} \end{array} \right.$
- Returned to barley.
- Returned to barley.
- Returned to farina.
- Omit this bread.
- Returned to oatmeal.
- Returned to oatmeal.
- $\left\{ \begin{array}{l} \text{Omitted castor oil and gr.} \\ \text{pwd. tab.} \end{array} \right.$
- $\left\{ \begin{array}{l} \text{Food reduced and diluted.} \\ \text{Food reduced.} \end{array} \right.$
- $\left\{ \begin{array}{l} \text{Food reduced and diluted.} \\ 1. \text{ Plain barley.} \\ 2. \text{ Milk reduced.} \\ 5. \text{ Milk reduced and diluted.} \end{array} \right.$
- Milk reduced.
- Milk reduced and diluted.
- Milk reduced.
- Milk reduced and plain barley.
- Plain barley, diluted.
- Back to pasteurized milk.
- Discontinued boiling milk.
- $\left\{ \begin{array}{l} \text{Limewater for eight days,} \\ \text{food reduced, orange omit-} \\ \text{ted.} \end{array} \right.$
- $\left\{ \begin{array}{l} \text{Omitted celery; zwieback in} \\ \text{place of bread; pasteurized} \\ \text{milk in place of sterilized} \\ \text{milk.} \end{array} \right.$
- Omitted beef.
- $\left\{ \begin{array}{l} \text{Castor oil; omitted milk;} \\ \text{reduced food.} \end{array} \right.$
- Omitted peach juice.
- Food reduced and diluted.
- 10 per cent. milk and food diluted.

In general, the method of treatment was as follows: If the feces were curdled, greenish, too frequent, too constipated or in any way abnormal, I looked for the cause of the trouble first in the food. If it could be located there, the change was made in the diet that I felt most certain would correct the disturbances. But if the cause seemed to be teething (when the feces were inclined to be loose), then the diet was confined to dried bread, barley, farina and other constipating foods, and no new experiments were made. When the baby began to take artificial food, each new food given was introduced in small quantities, one new one at a time, and the results watched for and noted. If his intestines could continue to turn out a smooth, yellow feces, and there were no other evidences of disturbance, a little more of the same food was given the next day and the results noted. But if the intestines failed properly to digest the food, I concluded that it was because they had been called upon to perform too difficult a task, and went back to a simple formula. If the disturbance was great, then I went back to the most easily digested food, to that formula which I knew his intestines could handle perfectly, and continued its use until a perfect movement, or at least a better movement resulted. Then I began again with the new food, this time increasing it more slowly or making it more dilute. Five times it seemed best to use medication, and castor oil was given. (The other times when castor oil was used it was as a preventative when he had a cold.)

I began in the third month to accustom the baby to the use of the chamber. In the matter of the feces, for 10 of the early months, the third and fourth,

seventh, eighth, ninth and tenth, and the fifteenth, sixteenth, seventeenth and eighteenth months, the average caught in the chamber was one-sixth of the total number. The exceptional months were the fifth and sixth, the eleventh and twelfth, and the thirteenth and fourteenth months, when the average was between one-third and one-half. But from the nineteenth month on the progress was steady from one-half for three months to five-sixths, to two-thirds, to three-fourths, and finally in the twenty-fifth month all were caught in the chamber. He had learned to ask in time. As to his urinating, I have kept no record, but I began to accustom him to urinate in the chamber during the third month. I held him over his chamber, some time within half an hour after eating or drinking (unless he were asleep) and immediately upon waking. The first dry day came when he was 22 months 2 days old. Twice that day he had asked, but the other times I had taken him. From 22 months 5 days to 22 months 1 week 5 days was the first week of dry nights. On 22 months 1 week 5 days he got his first spanking for wetting his diaper, and had the awfulness of a wet diaper duly impressed upon him. During the twenty-third month he would ask to go after he had begun to urinate. But by two years he had learned to ask, and to ask in time, and to control the muscles involved, so that he could wear drawers instead of diapers.

7. *Skin.* (See Chart XXX.)

(A) *Regular treatment.* The regular treatment for the skin was as follows: The flesh was washed daily and kept clean with ivory soap. The temperature of the water at first was 97°, but after the fifth month was gradually reduced to 92°. A powder of

cornstarch and boric acid (2 to 1) was used at first all over the body, but later only where necessary, that is, where flesh touched flesh, or where flesh would get wet. But the powder would ball up when it got wet, leaving the flesh exposed, which meant chafing as soon as moisture came, and it seemed as if the friction of these balls of powder also helped to make the flesh sore. So instead of using the powder on these sore places, zinc ointment, which is not affected by moisture and which, therefore, keeps the tender flesh covered, was used, and proved to be much more satisfactory than powder about the genital organs.

For the eyes an eye wash of 1 tsp. of boracic acid to 1 cup of water was used daily for about six months, and again during the twenty-fourth month, when the cold made a little matter form in the eyes.

The ears were cleaned daily, or when necessary, with a little albolene on some absorbent cotton wrapped around the end of a toothpick.

The nose was cleaned daily with a little albolene on some absorbent cotton wrapped around the end of a toothpick, and if the baby were going where he would be likely to be exposed to contagious diseases, after the tenth month he was sprayed with mucol, even though he had no indication of a cold. But this did not happen very frequently.

The scalp was washed daily with soap and water until it became sore. Whether I used too much soap or did not wash the soapsuds all out, I do not know, but after it became sore it was washed with soap only about once a month, and when well again, once a week.

(B) *Evidences of trouble and special treatment.*

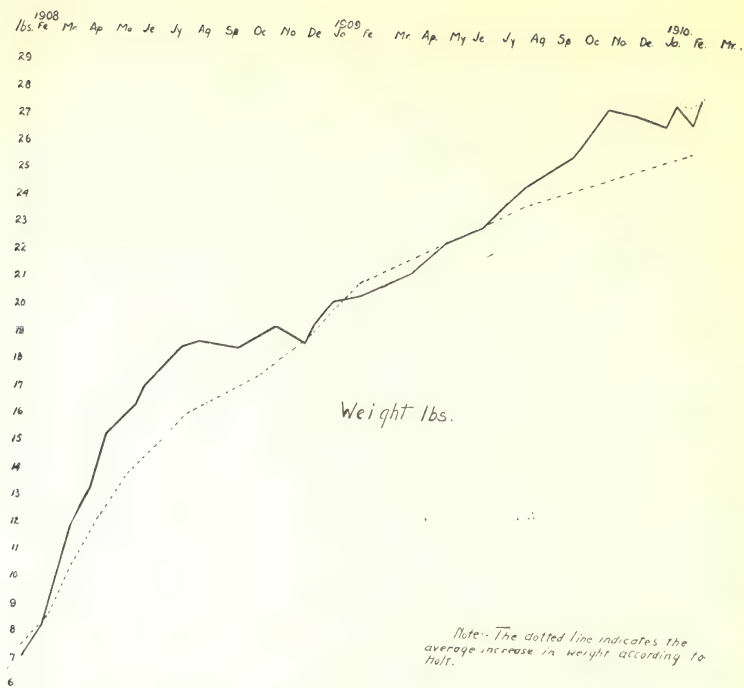


Chart XXXII. Weaning, teething, and two winter colds retarded the weight.

The evidences of disorder in the skin are grouped under six heads: 1, Rash; 2, Pimples; 3, Sore scalp; 4, Sore face; 5, Flesh rough (sore); 6, Sore about the anus. In the columns following these items is recorded the number of days each lasted. Under pimples the number of pimples is also recorded.

The treatment for these disorders was either local or systemic, or both. There were four ways in which the diet was modified (see Chart XXX): The food was reduced; oatmeal was omitted; only barley was used, and meat was omitted. And there were 11 curatives used on the skin: White vaseline, albolene, salt baths, zinc ointment, cold cream, violet emollient, lanoline, oil of cade, sulphur, olive oil, and resorcin.

After each of these 15 remedies for the skin I have placed the number of the particular disorder for which it was used. For instance, after "salt baths" is the number 5. Referring back to number 5, I read, "Flesh, rough sore," etc. Or, working the table the other way, for pimples (No. 2), I see they were treated in the third and fifth months by a reduction of the food, and in the twenty-first month by zinc ointment.

Summarizing the skin affections in this way, the rash lasted in all 23.5 days. Ordinarily the daily use of powder was sufficient to heal it, though once (thirteenth month) food was reduced, and once (seventeenth month) plain barley was used and zinc ointment applied. For the pimples, of which there appeared 19, which lasted in all 7.5 days, on the third month the food was reduced, and on the twenty-first month zinc ointment was applied. For the sore scalp food was reduced in the fifth month (though probably without effect); white vaseline was used in the

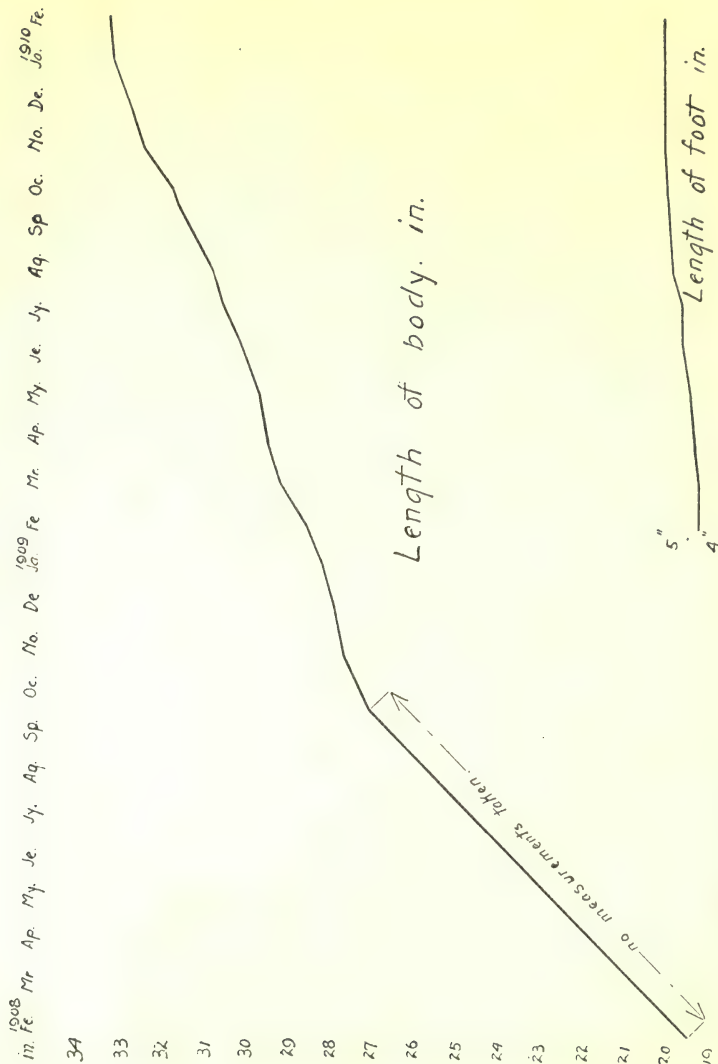
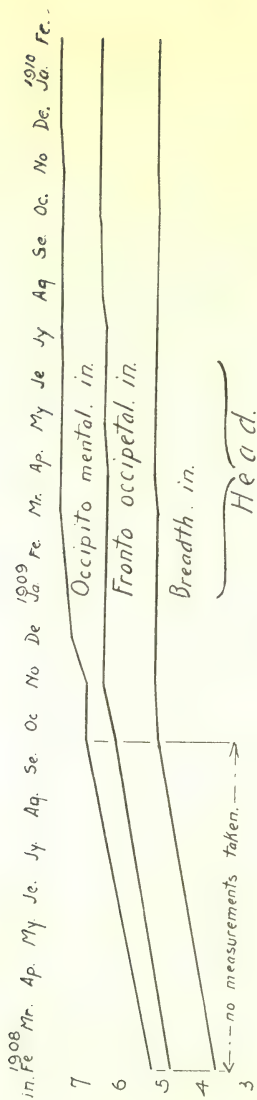


Chart XXXIII. He grew taller more rapidly during the earlier months.

third, fifth, seventh, eighth and twelfth months; liquid albolene in the twenty-third month (tended to make scalp more itchy); zinc ointment in the sixth and eighth months; cold cream (frequently mixed with vaseline) in the sixth and twelfth months; lanoline and oil of cade (doctor's prescription) in the twelfth month; lanoline, oil of cade and sulphur, thirteenth month (this cleaned up all the sores); olive oil in thirteenth, twenty-fourth and twenty-fifth months was not satisfactory, as it made scalp itchy; resorcin (doctor's prescription) was used in the twenty-fifth month. For sore face (seemed to be sore like the scalp) there was tried reduced diet, fifth, sixth and ninth months; white vaseline, fifth, eighth, ninth, tenth and eleventh months; zinc ointment, sixth, eighth, ninth and tenth months; cold cream, sixth, eighth, ninth, tenth and eleventh months; violet emollient, tenth, eleventh and twelfth months, after which it got well. (Several times both scalp and face would get entirely well, and then in an unguarded moment he would scratch them sore again.) For *rough or sore flesh*, reduced diet, fifth month; a fast in the twenty-first month, and white vaseline during the fifth, seventh, eighth and twenty-first months; albolene, fifth month; salt baths, fifth, sixth and seventh months. For *soreness about anus*, reduced food, fifteenth month, and omitted oatmeal, fourteenth month.

8. *Colds*. (See Chart XXXI.)

(A) *Frequency*. Leonard had a slight cold when he left the hospital, and had had a dose of castor oil and rhubarb administered to him there. From then (February) until the following November he was free from colds. Through the day and often late into



Note: The cephalic index changed nearly 2% (from 76.1% to 80%) during the first two years.

Chart XXXIV.

the night, practically all that summer, he slept in his bassinet, securely fastened, on the window sill. His colds (and even the least sniffing has been considered a cold) did not begin until the steam heat was on in November, and he had to spend more of his time indoors. From February to November of his second year, excepting four days, he was again free from colds. The colds came in November and January of his first year, and in November, December and January of his second year. In all they covered 62 days, or 8% of the total time.

(B) *Treatment.* In every case the first thing I did was to cut down the food and then to get the feces in perfect condition. Six times out of 8, castor oil was given; twice gray-powder tablets (though not enough, I learned later, to have had any effect); three times when there was difficulty in breathing, a mustard bath; and once when a little cough seemed obstinate, some pills (antimony and ipecac, 1-100 of a grain of each), prescribed by Dr. McCastline.

For local treatment, for the second cold later, mucol was used at the first symptom. If mucol did not check the cold, then menthol and albolene were dropped in the nose. Three times when he began to be hoarse a mustard plaster was put on the chest, and once for that first long cold, when he coughed for a long while and could not seem to get his breath, the fumes of compound tincture of benzoine were inhaled.

9. *Behavior.* (See p. 116, Chart XXVI, 9.) To what extent mental dispositions may influence a baby's digestion, or a baby's digestion may influence his mental dispositions, I do not know, but I am convinced that there is a very close connection there.

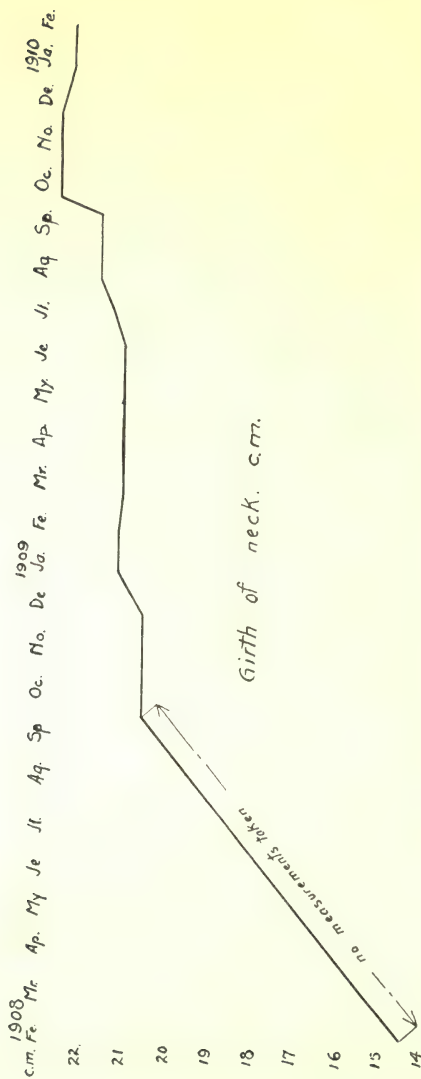


Chart XXXV. The earlier months show the more rapid growth.

At any rate, restlessness, particularly when it reached the stage of crossness, and still more, crying, pointed another finger at troubles of the digestive tract. Crying, except that caused by hunger or pain in teething, or the desire to be with folks, or to be taken up, came, I believe, only as a warning that a change in diet was needed.

Once, sixth month, the baby's behavior was halfway between good and excellent; twice, second month and twelfth month, it was .4 away from excellent; once, ninth month, it was .3 away from excellent; four times, third, fourth, fifth and tenth months, it was .2 away, and twice, seventh and fifteenth months, it was one-eighth away. But for the remaining 13 months it averaged only some hundredths (.06) away from excellent, and for the last week, when all the first 16 teeth were finally through, his behavior was excellent.

10. *Crying.* (See p. 116, Chart XXVI, 10.)

(A) *Causes.* In recording the crying I have not included those times he cried when hurt by falling, but have noted only the crying from other causes. For at least 10 months (tenth, twelfth, fourteenth, fifteenth, sixteenth, nineteenth, twenty-first, twenty-second, twenty-third and twenty-fourth months) probably most of the crying was caused by teething pains, judging from the facts that he drooled, kept his fingers in his mouth, and that tannic acid rubbed on the gums brought relief. Three times he cried while vomiting or doing feces. Again, seventh and twentieth months, he cried for company when put to bed. During the sixth and ninth months the cause was probably wrong feeding. Twice, fifteenth and eighteenth months, it was because of a wet diaper.

During the twentieth month he cried after castor oil had been taken, and during the nineteenth month I believe he fretted because he was hungry. These were the most evident causes for his tears, though frequently I was at a loss for an explanation.

(B) *Frequency.* During 16 months (fifth, eighth, eleventh, and from the thirteenth to the twenty-fifth) the average was less than one minute a day (0.8). For six months (fourth, sixth, seventh, ninth, tenth and twelfth) the average was 7.4 minutes a day; for the third month 23, and for the second month 37 minutes a day.

10. *Weight and other measurements.* (See Chart XXXII.) Growth was fastest during the first six months. Throughout it was impeded in proportion to the irregularities in his general condition. The first weight was taken at the hospital; I took those following up to September, 1908; Dr. McCastline took the rest. (The dotted line is the Holt average.) All weights were taken without clothes.

Leonard started 0.4 of a pound below the Holt average, but the difference steadily decreased until by the end of the month he was up to the standard. Later for 3.5 months (middle of January, through April, 1909) he was 0.5 pound or less below it. Thereafter he was above. In August, 1908, and in November, 1909, he was about 2.5 pounds above the Holt average.

Teething and a cold account for loss of weight in September, October, November, December, 1908, and in November, December, 1909, and January and February, 1910.

After September, 1908, Dr. McCastline took 17 other careful measurements, and these, together with

a few measurements taken at birth at the hospital, such as those of the head, length of the body and girth of neck, are recorded in the following charts:

XXXIII. Length of Body and Foot.

XXXIV. Head Measurements.

XXXV. Girth of Neck.

XXXVI. Girths of Head, Ninth Rib, Hips, Chest and Waist.

XXXVII. Breadth of Shoulders, Ninth Rib, Hips and Chest, and Depth of Abdomen and Chest.

The following list of these items shows the first and last measurements taken in each case and the relative gain in two years, or from the ninth to the twenty-fourth month:

	At Birth.	At 2 Years.	Gain in Per Cent.
Weight.....	7 pounds.	28 pounds.	300
Length. { Body.....	19.5 inches.	33.4 inches.	71
{ Foot (1 Yr.).....	4.4 "	5.25 "	19
Breadth... {	3.75 "	5.45 "	45
Fronto-occ. { Head.....	4.8 "	6.8 "	42
Occ. Ment. {	5.25 "	7.75 "	41
Cephalic index.....	78.1%	80.0%	1.9
Circ.—Neck.....	14.5 "	22.5 "	55

At 7 Months.

Breadth.	{ Shoulders.....	7.2 "	8.6 "	25
	{ Chest.....	5.4 "	6.4 "	19
	{ Ninth Rib.....	5.9 "	6.6 "	12
	{ Hips.....	5.6 "	6.5 "	16
Depth.	{ Chest.....	4.7 "	5.05 "	7
	{ Abdomen.....	4.7 "	5.2 "	11
Circ. {	Head.....	18.1 "	19.5 "	8
	Chest.....	16.5 "	19.1 "	15
	Ninth Rib.....	17.2 "	19.6 "	14
	Waist.....	16.1 "	18.6 "	15
	Hips.....	16.6 "	18.6 "	12

12. *Physical achievements.* (See Plates I, II and III.) As a matter of general observation, it seemed that the periods of greatest physical activity were coexistent with the periods of the most perfect health, and activity diminished during other times in direct ratio to the physical irregularities.

The following is the order in which and the dates when the activities were mastered:

First Month:

(3.5 W.). Lying on his stomach, he held up his head, as in p. 176, Plate I, No. 2.

Second Month:

Held up head more steadily.

Third Month:

(10 W.). Smiled.

(12 W. 2 D.). Laughed aloud.

Fourth Month:

(15 W. 1 D.). Sat up alone for about two minutes.

(15 W. 4 D.). Found his hands, after several days' trial.

(16 W. 4 D.). I held him up by his feet. (See p. 176, Plate I, No. 3.)

(16 W. 2 D.). Reached out and caught hold of scales.

(17 W. 1 D.). Held him suspended by his arms.

Fifth Month:

(17 W. 4 D.). Laughed heartily when his toes were put into his mouth. (See Fig. 3, p. 37.)

(17 W. 6 D.). I held him up by his hands and he put his feet on my chest.

(18 W.). Rode cock-horse. (See Plate I, No. 4, p. 176.)

(19 W. 2 D.). Greeted us with a smile and gurglings.

(19 W. 6 D.). Tried to raise himself up by propping himself on one elbow. Later tried to pull himself up by pulling on the horizontal bar in his basket. Again, lying on the bed, he grasped his father's fingers and after three attempts pulled himself up to a sitting position.

(20 W.). Kicked hard against the bar (broom handle) in his basket. Laughed heartily when I pinched and slapped. Holding

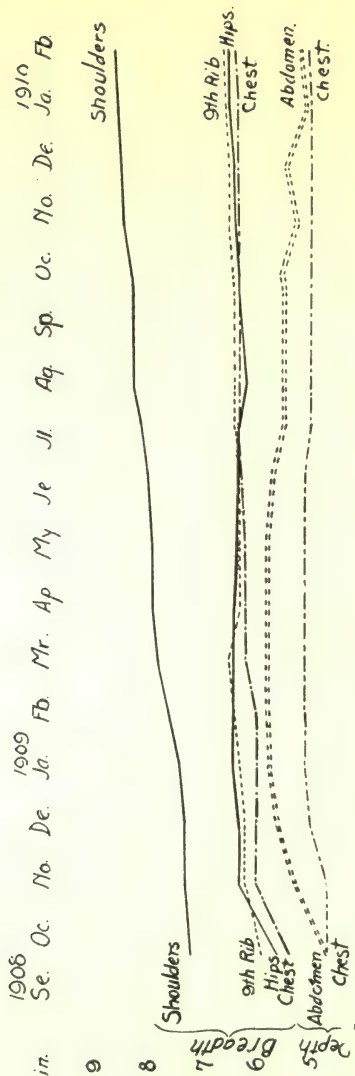


Chart XXXVII. Note how little these elements have changed. He grew most rapidly up, less rapidly around, but not much across.

slapped. Holding on to a stick which I held out to him, he raised himself up several times from a lying to a sitting position.

Sixth Month:

(22 W.). Sat alone for from three to five minutes.

(23 W.). First ride out-of-doors in carriage. Sat up straight for an hour. (See p. 176, Plate I, No. 11.)

(23 W.). Pulled himself up whenever he could get hold of my fingers. Kicked and splashed in his tub.

Seventh Month:

Lying on his back, he kicked a tin pan almost steadily for an hour.

(27 W. 2 D.). Stood alone by his basket. (See p. 178, Plate II, No. 1.) Seized every opportunity to try to pull himself up on his feet.

(28 W.). Pulled himself up alone to a standing position.

(28 W. 5 D.). Moved, by rolling on the floor, a distance of three feet.

Eighth Month:

(32 W. 4 D.). Took steps when supported.

(33 W. 2 D.). Walked, by grasping moving things.

(34 W. 1 D.). With the assistance of a chair, pulled himself up from a sitting position to a standing position.

Ninth Month:

Got up on his feet at every opportunity.

Managed his baby tender very well (see p. 178, Plate II, No. 6).

Held his own weight hanging from a stick or clothes line (see p. 178, Plate II, Nos. 4 and 8).

Tenth Month:

At home on his feet, but had to grasp something to keep his balance (see p. 178, Plate II, Nos. 3, 5 and 7).

Eleventh Month:

(43 W. 5 D.). Took three steps alone twice.

(43 W. 6 D.). Took about 50 steps, holding my hand.

(44 W.). Took five steps, holding my apron.

(46 W. 4 D.). Walked behind his carriage, pushing it.

(46 W. 6 D.). Walked from one person to another a few feet away. Took several long walks while I held his jacket and he balanced himself with his clenched fists.

(47 W.). Walked to me (five feet away) when I was not expecting him to come.

Twelfth Month:

Walked all about, assisting himself by people or furniture, grow-

ing more and more venturesome, and having many hard tumbles. Finally, while walking from another person to me, and being chased, in his haste he gave up his support and ran into my arms. After this, he walked other distances alone.
(52 W. 1 D.). As he walks up to things, instead of grabbing hold tight for support, he only touches them lightly and walks on.

Thirteenth Month:

(1 Y. 1 W. 3 D.). Ran as well as walked. Climbed up and down stairs, holding my hand.
(1 Y. 2 W.). Climbed upstairs on his hands and knees alone.

Fourteenth Month:

Walked more, ran more, climbed more stairs. On favorable days (February) walked in Riverside Park.
(13 M. 1 W.). Dug up his first shovelful of dirt in Riverside (see p. 180, Plate III, No. 3).
Got up and down from a sitting or lying position to his feet without assistance of chair or person.

Fifteenth and Sixteenth Months:

Increased facility in all achievements.

Seventeenth Month:

Climbed on to dining table by means of a chair, without assistance or disaster.

Eighteenth Month:

Climbed everything climbable.

Nineteenth Month:

Climbed all about the Park benches.
Hammered nails, and hit them straight on the head most of the time (see p. 180, Plate III, No. 5).
(18.5 M.). Walked all the way up and down six flights of stairs, holding my hand and the banister.
(18 M. 3 W.). Climbed to fourth step of a ladder alone (see p. 180, Plate III, No. 10).
Tried to jump while walking.

Twentieth Month:

Ran and climbed, went up and down stairs with increasingly greater ease, fed himself and did not spill much.

Twenty-first Month:

Increased facility in all achievements.

Twenty-second Month:

More vigorous and sure in his activities.

Twenty-third Month:

Sprayed his own nose and throat while I stood by to assist (see p. 180, Plate III, No. 2).

Twenty-fourth Month:

Blew his own nose. Walked down stairs, holding to the banister, but pushing my hand away. Helped mother about the house: carried dishes, manipulated broom and sweeper and carpet-beater, broke up macaroni, and did several little errands for her. Held absorbent cotton over his own eyes while mother dropped menthol in his nose.

Twenty-fifth Month:

Held chamber for himself to urinate, put it down, raised both lids of the toilet, emptied chamber, put it down, turned on water in tub, got water in chamber and emptied chamber in toilet and turned off water, rarely spilling any. Took my hand as an equal, but no longer as a dependent. Always ran when on an errand. Walked on all fours, with knee-joint straight. Investigated everything he could reach—water hydrants, bicycles, automobiles, etc.; pulled the dumbwaiter up and down, and manipulated most of the mechanisms on an Underwood typewriter. Walked three-fourths of a mile in one hour. While running fast could turn a sharp corner with dexterity. Threw a ball well.

The Teeth.

	Front double	Ca- nine	Incisors				Ca- nine	Front double	
Age (Mo.)	16 $\frac{1}{4}$	22	14 $\frac{3}{4}$	10 $\frac{1}{2}$	10 $\frac{1}{2}$	15 $\frac{1}{4}$	22 $\frac{1}{2}$	16	
Order of appearing	10	13	7	2	3	8	14	9	Upper
	12	15	6	1	4	5	16	11	Lower
Age (Mo.)	20	23	14	10	12	13	24	18	
	Right ←					→ Left.			

Chart XXXVIII. The numbers on the second and third lines indicate the order in which the teeth appeared. Twelve were in by two years.

13. *Teething.* (See Chart XXXVIII.) The teething process was sometimes painful, and several times upset digestive processes to such an extent that special foods had to be selected during those intervals.

I believe that the teeth gave no trouble until the ninth month. Thereafter painful teething was indicated by the fact that the mouth drooled; that he kept putting his fingers to his mouth; that he was noticeably indifferent, or fretted, or even cried; that the feces became loose, and that tannic acid* rubbed on the gums always brought immediate relief. One or several of these indications might be given; the presence of all of them was positive proof.

The gums where the first incisors were coming through began to be swollen and white in the ninth month, and I believe that some of the irregularities of that and of the tenth month as well were caused by the pains of teething. The first tooth, however, to cut its way through, was the lower right incisor, early in the eleventh month; at 15.25 months the eight incisors were through. These were followed by the four front double teeth, between the seventeenth and twenty-first months, and these by the four canines from the twenty-third to the twenty-fifth months; the last one was cut three days after he

*Of three physicians and two dentists who were consulted, three advised the use of tannic acid (20 per cent. in alcohol), but one objected to it on the ground that, though it did give immediate relief, that very tendency toward astringency which caused the relief was in the end a condition distinctly to be avoided. In fact, he claimed the very opposite effect should be brought about, and advised much rubbing, or, if necessary, lancing. Except as a last resort to relieve the pain, lancing was objected to by the others because it left a scar, and scar-tissue is less elastic. A third physician said that as the gums were to be kept very soft, they should not be rubbed or have tannic acid applied, as both tended to harden the gums.

was two years of age. All were straight and perfect.

During the 17 months of teething there were apparently four months of relief from teething pains, the eleventh, eighteenth, twentieth and twenty-fifth. There were seven months in which there were but slight disturbances, fretting or crying, or possibly a few loose feces; these were the ninth, twelfth, thirteenth, fourteenth, fifteenth, nineteenth and twenty-first months. In four months, the tenth, sixteenth, seventeenth and twenty-third, the loose feces during periods of a few days were apparently caused by teething pains. Twice, during the seventeenth and twenty-fourth months, the loose feces continued one and three weeks, respectively, and the gums obviously pained. During these periods those foods that tended to make the feces loose were avoided. Twice, during the tenth and twenty-second months, he had a cold at the same time that his teeth were giving trouble, which made it difficult to determine which was the source of disturbance. It was during that seventeenth month that he cut the two upper front double teeth, and during the twenty-fourth that the two lower canine teeth gave trouble. All the other teeth erupted with little difficulty.

14. *Remarks.*

(A) *Vocabulary of motions and words.* Of my baby's mental development I kept no systematic record, but merely noted those phases of it that involved some physical manifestation, like reaching out to get something, or stooping down to pick up something. But I did record his vocabulary, not only of words, but of the gestures that preceded or accompanied the spoken word. The following was his "vocabulary of motions," as we called it, and his

vocabulary of words. The acquisitions are reported in the order they were made:

<i>Age. Our word or words. His motion for it. His word or sound for it.</i>		
8 mo.	By-by.	Waves hand from wrist.
	Where's baby gone?	Hides, by covering up eyes with hands, or, if in my arms, laying his head on my shoulder.
	I see.	Uncovers his eyes or raises his head.
10 mo.	No, no.	Shakes his head, left to right.
	Music.	Makes his arm go round in long, slow movements. (I sing to him, moving my arms rhythmically at the same time, so he associates the movement of arms with music.)
18 mo.	Dance.	Turns around.
	Key.	Twists wrist, as in turning key.
	Yes, yes.	Nods head up and down.
	Toilet.	(I say to him at A, a. (A as in certain times ask.) that he should "ask to go to toilet. Ask, ask.")
19 mo.	Egg beater.	Moves arm as in turning egg beater.
	Dumb waiter.	Moves arms as in pulling up the dumb waiter.
	Tooth brush.	Rubs teeth with one finger.

	Bread.	Makes arm movement made in cutting bread.	
	All gone.	Puts hands together and then throws them wide apart.	
	Chase me, or I'll give chase.	Takes the attitude of starting to run.	
	Kiss.	Makes the motion with his lips.	
19½ mo.	Boat.		Makes the noise of the whistle.
	Sing.		Vocalizes.
	Margaret.		"Ma."
	If asked to call anyone.		Vocalizes on "oo."
20 mo.	Button waist.	Doubles up his hands into fists and moves them as if buttoning up his waist.	
	Watch.	Puts hand to ear as if listening to watch.	
	How does Daddy brush his shoes?	Makes the motion of the brush rubbing over the shoe.	
	Birdie.		Makes the chirping noise of the bird.
20½ mo.	Telephone.	Holds hand to ear as if holding the receiver there.	
	Talk.		"Athaleegathalee," or to that effect.
	Mamma.		"Mamma." (Repeats only after me.)
	Daddy.		"Dada." (Repeats only after me.)
20¾ mo.	Comb hair.	Rubs hand over hair, as in combing hair.	
	Hammer.	Makes the motion of hammering.	
	How does Margaret wash her face?	Rubs hands over face as she does.	



Fig. 21. His motion for "Carry me down-stairs?" (Age, twenty-one months.)

	Horse.	Makes with his lips the sound a horse makes in snorting.
21 mo.	Spread bread.	Rubs one first finger on the other.
	Sugar.	Holds hand up and makes the motion of shaking sugar from a spoon.
	Carry me down stairs.	Makes two fists, an intense face, scrunches down and grunts (see Fig. 21, p. 164.
	Good dinner.	Shrugs up his shoulders and inclines head one side. (This was a position I had unconsciously taken as I asked him if he were having a good dinner.) (See Fig. 22, p. 166.
	Shredded wheat.	Moves hands and fingers as if breaking up shredded wheat.
	Cracker.	Bites teeth together.
	Kite.	"K."
	Squeaking door.	Makes the squeaking noise a door makes.
22 mo.	Steam.	"sss."
	How does the rooster go?	"Coo, coo, coo."
	Automobile.	"Honk. honk."
	Good-night.	"Ni-ni."
	All right.	"Aw i."

*Our word.**His word.*

22 mo.	Hammer	"Ná ná"
	Thank you	"Tä tä"
	Daddy	"Dä"
	Blocks	"Bä"
	Cards	"Kä"



Fig. 22. His way of saying "Such a good dinner." (Age, twenty-one months.)

23 mo.	Baby	"Bäby"
	Barley	"Bä"
	Grandma	"Mä"
	Box	"Bä"
	Butter	"Bur"
	Open	"O"
	Open box	"O bä"
	Bottle	"Bä"
	Zwiebach	"Bä"
	Dry diaper	"Di di"
	Bread	"Bä"
	Dinner	"Ninee"
	Door	"Do"
	Butter	"Ta"
	Pin	"Min"
	All gone	"Aw aw"
	Trolley car	"Ca ca"
	Mamma	"Mama"
	Grandma	"Mama"
24 mo.	Leonard	"Nana"
	Grandma gone	"Mama aw aw"
	By by	"By by"
	Garter	"Ga"
	Clock	"Ca"
	Bath	"Ba"
	Chocolate	"Ka"
	Prunes	"Mur"
	Milk	"Mi"
	Bed	"Bē"
	George	"Dor"
	Match	"Ma"
	Coat	"Co"

From the list,* then, it seems that to the twenty-second month he used 12 sounds that conveyed meanings to us. They were:

1. "A, a," to ask to go to toilet.
2. "Oo," pitched like the whistle on boats.
3. His kind of singing.
4. "Ma," Margaret.
5. "Oo, oo, oo," used in calling a person.
6. The chirping noise of a bird.
7. "Athaleegathalee," when asked to talk.
8. "Mama" (after me).

*In addition to these, he has tried to repeat many words after us, such as *molly-coddle*, "ca ca," but the list, unless otherwise indicated, includes only his working vocabulary.



Fig. 23. The romper suit, buttoning down the side. Very good made of crinkled seersucker. (Age, nineteen months.)

9. "Dada" (after me).
10. The snort a horse makes.
11. "K" for kite.
12. The squeaking noise a door makes.

I made no more effort to teach him these sounds than I had to teach him to walk. In both I merely encouraged his efforts after he had taken the initiative.

Of course, he jabbered a great deal, but those 12 sounds were the only ones that crystallized into meanings that we understood as such and that he used in conveying ideas to us. But he had a good working vocabulary of the 28 motions above noted, and it was chiefly by these that he communicated with us.

After he was 22 months old he added new words rapidly. One by one these new words took the place of or accompanied the earlier motions; as, "*na na*," *hammer*, was used with the motion of hammering; "*bur*," or later "*ta*," for *butter*, was used with the motion of spreading bread, etc. He used 54 words, as well as 28 motions, in the twenty-fifth month.

But, though his vocabulary seems limited, that has not interfered with there being a perfect understanding between us on most occasions. He frequently asks my permission to do a certain thing by looking at me, raising the eyebrows and nodding the head quite as adults do. He has done many a little errand for me about the house, and in many ways, of which I have kept no record, he has shown that long before he could use them he understood the words I used.

(B) *Clothing*. Baby came home from the hospital dressed in the number and kind of dresses there adopted: namely, a flannel bandage, a flannel shirt,



Fig. 24. Overalls for the roof. (Age, nineteen months.)

diapers, a flannel petticoat and a woven cotton slip. But I soon began to question the use of the bandage and the flannel garments. They seemed too confining and too irritating, and as they were always getting wet, were a source of trouble both to baby and myself. So I consulted Professor Fisher of Yale, five doctors and three maternity hospitals, and read what I found in seven books that gave advice concerning the layette. Without going into the details of this investigation, at the close of it I became suspicious that the bandage and the use of flannel were but relics of customs and tradition. At any rate, I felt justified in giving cotton a trial and in removing the bandage. So, while keeping a most careful watch upon the baby's condition, I discarded, one by one, the bandage, the shirt, the skirt, and even the cotton muslin dress. All these were replaced by a single garment that I had found in the course of my investigations—a roomy, comfortable, long, knitted, cotton garment, with a draw-string at the bottom, made by the Arnold Knit Goods Company. If warm, this, with his cotton diaper, constituted his indoor dress; if cool, a cashmere jacket was added, or a thin flannel shawl was thrown over his shoulders. When he went to sleep (either out of doors or in a room with the windows open), since he always got his hands out from under the covers, he wore on cold days a woolen jacket, opening at the back and sewed up at the sleeves, that covered the chest and hands completely. A woolen blanket or two kept the rest of the body warm. As this woolen jacket was short, and therefore “above the water-line,” if I may so speak, there was to be kept dry and clean only one garment and a diaper instead of three garments, a band and a dia-



Fig. 25. A very cold day. A worsted sweater, leggings, and coat, mittens and cap with ear flaps, all needed to keep him warm.

per, with their uncomfortable binding on the baby. Moreover, this newly-found knitted garment was more easily washed than the woven one, required no starching, and did not need to be ironed.

As soon as this long dress began to be in the baby's way (fifth month), it was replaced by a short one of the same material, made without the draw-string (Fig. 13). (See p. 176, Plate I, No. 9, and p. 178, Plate II, No. 3.) When cool, the little cashmere jacket was worn over this, too (see p. 65, Fig. 8).

When he left off diapers at two years, they were replaced by knitted cotton drawers, fastened by buttons to a knitted cotton waist, to which also were fastened the garters.

A bib (Fig. 5) was necessary during drooling days.

Later, rompers of plain dark green or blue gingham (p. 168, Fig. 23) or of crinkled seersucker were worn over this garment, making a petticoat of the knitted dress, and when he went to the roof, overalls were worn over these (p. 170, Fig. 24). On cold days, for out-of-doors, a white knitted worsted suit (p. 71, Fig. 9) was put over the rompers. The only changes made during the next winter were the addition of a medium weight cotton shirt during the very cold weather and a coat (p. 172, Fig. 25). A new sweater and brown leggings (p. 174, Fig. 26) replaced the out-grown white ones.

As long as the baby remained within a limited radius, on a rug or a blanket on the floor, no shoes or even stockings were put on his feet. But as he began to walk about, very soft sandals were used (ninth month (see p. 178, Plate II, No. 4). Later, at a year and a half, "Educator" sandals (p. 168, Fig. 23), and



Fig. 26. The "Brownie" suit for the second winter, out-of-doors.

still later "Educator" shoes (p. 164, Fig. 21), were worn.

As for stockings, woolen ones were worn the first winter (though I now believe that cotton ones would have been better). Short cotton socks, or frequently none at all, were worn through the summer, and long cotton ones during the second winter.

A warm hood, covering the ears (p. 164, Fig. 21), was worn during the first winter and on the coldest days of the second winter. A Scotch cap with ear tabs (p. 174, Fig. 26) was generally worn during the warmer days of the second winter. When he wore any hat at all during the summer, it was a rimmed linen hat.

Mittens were found necessary during the winter months (Fig. 25, p. 172).

The principles which guided me in dressing the boy were the following:

1. *His health.* His dress must conserve energy and must help, not hinder, the processes making for healthy, full and free development. That all clothing should be clean follows as an obvious corollary.

2. *His comfort.* The garments must not scratch, irritate, bind any part of the flesh or any muscle, nor interfere in any way with the performance of the child's physical activities.

3. *My convenience.* The dressing of the boy and caring for his wardrobe had to be studied also from the point of view of reducing to its lowest terms the drudgery involved therein for the mother. A little studying of the problem rescued from the tub and needle hours in which I was free to be my child's companion instead of his slave, and which at the same time in no way risked his health or comfort.



After frequent exercise since
4th mo, Age, 5 1/4 mo, Jy 13, '08.



A position held since 3 1/2 weeks.
Age, 4 1/4 mo., Je. 28, '08.



At home up & side-down
since 4th mo, Age, 4 1/2 mo, Jy 13, '08.



During 4th mo. reached out
for things Age, 4 1/2 mo, Je 21, '08.



From 5mo. of age, sat up alone
Age, 5 1/2 mo, Jy. 27, '08.



"Ride a cock horse"
Age, 4 1/4 mo, Je. 13, '08.



His first portrait
Age, 4 1/4 mo., Je. 13, '08.



Gaining first-hand knowledge of the
hammer Age, 6 1/2 mo, Ag. 26, '08.



A sense of the ridiculous came
early Age, 6 mo, Jan 6, '08.



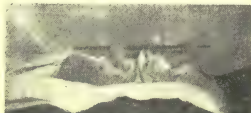
Has laughed aloud to us since the 13th wk
Age, 4 3/4 mo., Je. 28, '08.



His first carriage ride.
Age, 5 1/4 mo Jy 13, '08.



Much interested in that camera
Age, 6 1/2 mo., Ag. 18, '08.



Both hands and feet grab the trapeze.
Age, 7 1/4 mo., Sp. 29, '08.



Keeping cool on a linen stretcher
Age, 6 1/2 mo, Ag. 18, '08.

Activities up to standing days, 6 1/2 months.

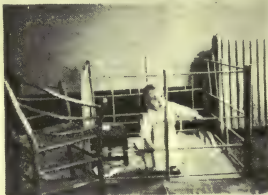
4. *A sense of beauty.* The baby's sense of beauty is not a factor to be reckoned with during at least these first two years, so psychologists tell us. Therefore, dainty, beautifully embroidered and hem-stitched garments, though they may gratify a mother's sense of beauty, will not be appreciated by the baby. What is appropriate in dress for the age and activities of the child is more beautiful, because more fitting, than what is inappropriate, however beautiful the mother may feel it to be.

(C) *Exercise.* Whenever possible, either indoors at any time, or in a warm room in winter, or even out-of-doors in the summer, I have treated the lad to the luxury of running about in his bare skin. Then I rub his flesh well all over, and let him swing as he holds to my fingers or a trapeze. I hold him by his feet upside down, swing him back and forth, and in various ways exercise his whole body.

(D) *Sucking the thumb.* At two years this habit was not yet broken. This is the Nemesis following my failure to check an undesirable habit at the outset. It stole many hours from his sleep and from my time. I tried bitter quinine on the thumb, slapping the hand, pinching the finger, talking to him, holding his hand while he went to sleep, binding up his arm and hand, putting his hand in a round pasteboard roll, wrapping his thumbs with adhesive plaster, and so on, but he soon got over all the hurts inflicted and the bad taste in the mouth, and became most efficient in freeing his thumb from bondage. The habit has left no traces in the shape of the mouth or thumb, as the thumb was not in the mouth for a very long time (never when awake, and only for a few minutes as he dropped off to sleep).



The second try at standing.
Age 6½ mo, Ag. 18, '08.



The pen offered good places to hold to.
Age 9½ mo, No. 21, '08.



At home upon his feet.
Age 7 mo, Sp. 21, '08.



More difficult to hang to
a rope than a stick.
Age, 8¾ mo, Oct. 25, '08.



Steadying himself with one hand.
Age, 9½ mo, No. 21, '08.



In his baby tender, he plays
a lively game of hide-and-
seek about the roof.
Age, 8¾ mo, Oc. 28, '08.



Steadying himself with one hand
he reaches the floor with the other.
Age 11½ mo, Ja. 13, '09.



Held his own weight
since 4th month.
Age, 9½ mo., Nov. 22, '08.



A flight in the swing.
Age, 11¾ mo, Ja. 21, '09.



Up and down in mother's hands.
Age, 8½ mo, Oct. 14, '08.

Activities between 6½ months and 1 Year.

But his babyhood days have been so nearly ideal that some of his friends welcome this little imperfection as proof that he is, after all, quite human.

(E) *Heritage*. Leonard's parents were both of long-lived families, were in sound health and inherited no diseases. When Leonard was born his father was a college professor, 45 years old. His mother was a college woman, who before her marriage had been a teacher. She was 35 years of age at the time of his birth.

(F) *Circumcision*. Though there was no binding apparent, for purely hygienic reasons Leonard was circumcised. The operation was performed at the hospital, and the wound was healed before we left there on the fourteenth day.



Walked alone, 2 days before 1 yr. old
Age, 1 yr 4 mo., Feb. 9, '09



Since 23 mos. has sprayed his own nose
and throat. Age, 22 mo., Dec. '09.



Dug up first dirt in Riverside. 16 mo.
Age, 16 3/4 mo., Dec. 20, '09.



Has fed himself since 19th month.
Age, 23 mo., Jan. 16, '10.



Hammering nails a favorite occupation, since
18 mo. Age, 22 1/2 mo., Dec. 18, '09.



Reaching, put to climb up mother.
Age, 13 1/2 mo., Nov. 25, '09.



Walking on hands is jolly fun.
Age, 20 mo., Oct. 3, '09.



The sand pile makes of
the pen, a desired retreat.
Age, 16 mo., June 8, '09.



Has climbed a ladder
unassisted since 19th mo.
Age, 19 mo., Sep. 5, '09.

Activities between 1 yr. and 2 yrs.

CHAPTER IV.

A FINAL WORD.

The conclusion of the whole matter is simply this: *a worry in time saves nine, and a doctor's bill.*

Some, no doubt, will maintain that this habit of paying attention to trifles is not only unwarranted on the baby's account, but that also it would breed a worrying, nervous attitude of mind in the mother. Time enough to bother, they will argue, when a rousing good case of colic keeps the family up all night, when the baby has a temperature that amounts to something and stays there for a couple of days, when the flesh is sore and unsightly, when the excreta have been green, slimy and unchecked for days, or when the baby is so cross that everybody feels like shaking him and throwing him down in disgust because the shaking does not shake out his ill temper. It is time enough *then* to worry, they say, and if things get too bad one can always send for the doctor. The doctor brought the other children, that is, most of them, through their attacks, and they propose to leave the worrying to *him*. Doubtless were there not actually many such mothers and fathers, not a few doctors would have to take down their shingles.

Nay, more, I have even heard it argued that it was all right for babies to have occasional upsets, for in that way the system got practice in righting itself. Do these parents have nauseating dinners periodically prepared for themselves and conscientiously bring about a good attack of indigestion just to keep their systems in shape for getting over such attacks? Surely, indigestion is common enough among adults, but I cannot believe it is practiced with any such "malice aforethought." And when one-fifth of the babies die yearly from wholly preventable intestinal troubles, one is inclined to question the practices that are responsible for infant mortality, particularly when nature has seen to it that ninety-nine of every hundred babies begin life practically well and healthy, regardless of what has been their parents' previous condition of health.

No, I found it was worth while to try *to keep the baby well*, though it meant constant watch for seemingly trivial indications of indigestion, constant endeavor to prevent their continuance or recurrence, and what some may regard as unnecessary fuss and bother with timeing, weighing, measuring and record taking. But it paid, for it has spared me absolutely from those prolonged sieges of anxious worrying when a little life seems to be ebbing away and one waits and waits through the long, dark night for the tide to turn. I have known nothing of this kind of anxiety. On the contrary, my kind of worrying—if it may be called that—has played its part in giving me a sweet-tempered, rollicking, hearty little lad as my constant companion for these two years, and will, I hope, give to the world later, a calm, thoughtful, amiable, dignified spirit.

From my point of view, I cannot, but from theirs I can, understand why my friends commiserated me before my baby was born. One after another tried to comfort me, as Job's comforters always do, with: "Now you are in for it!" "Your time has come at last!" "If you can only pull through the first two years, then he will begin to be cunning," and so on, as if some awful Nemesis were about to fall upon me and I were doomed to torment for a period. But these two years with my baby have been the happiest of my life. The problem of raising a baby has not only been intellectually stimulating—I know, for instance, I got more out of it than I ever got out of an equal amount of time spent on geometry, though I reveled in geometry, too—but emotionally as well. I find that I have never been more on the *qui vive* than during these two years. To behold a little blind, deaf, speechless, red, uncontrolled mortal gradually see, hear, gain muscular control, grow shapely and comely, experiment and investigate, talk, laugh and love—in a word, to attain all the traits of a human being—has been an exquisite pleasure, full of surprises, full of affection, full of the joy that accompanies achievement, full of all that is implied in the time-honored expression, "mother love." Long ago Cornelia knew where to point to her jewels, and I, too, find her kind mine.

Although, as I said at the beginning, no general conclusions as to the care and treatment of other babies can be made from this one case, yet if a number of such records, say 50 or 75, could be kept and studied, and if, along with these, there could be conducted some intensive laboratory work bearing directly on the problem in hand, I believe that a still

better book than has yet been written, excellent as the available ones are, could be put into the hands of intelligent mothers. Such investigations would surely add to our knowledge of the variability of individual children and furnish as well maxims and principles of great practical value for all mothers.

It is with the hope that this record of the first two years of Leonard's life may act as a point of departure, if not an example, in the study of these first two years of life that his mother has gladly kept it and now gives it to the world.

INDEX

Abbreviations used, 15.

Abdomen,

See under Measurements.

Accuracy of data, 18.

Achievements,

See Physical achievements.

Age, how recorded, 15.

On record sheet, 17.

13th day to 17th day, 23, 24; 7 wks.

3 da. to 8 wks. 3 da., 25-29; 2 mo.,

30-33; 3 mo., 32, 33; 4 mo., 31, 33,

34, 35; 5 mo., 36-43; 6 mo., 43-49;

7 mo., 49-51; 8 mo., 51-59; 9 mo.,

59-69; 10 mo., 68, 69; 11 mo., 69,

70; 12 mo., 72-75; 13 mo., 74, 75;

14 mo., 75, 76; 15 mo., 75, 77;

16 mo., 78, 79; 17 mo., 79, 80;

18 mo., 79, 82; 19 mo., 86, 88;

20 mo., 86, 90, 93; 21 mo., 93, 95;

22 mo., 95, 96; 23 mo., 95, 98, 107;

24 mo., 107, 109, 113.

Air, fresh, 9, 12.

Alboline,

See Medicines.

See under Skin.

Antimony and ipecac,

See Medicines.

See Cold.

Appetite, evidence of health, 8.

Apple sauce.

See under Diet.

Arnold knit goods, 171, 173.

Averages, dangers of, 7.

Baby culture, 7, 13, 14, 135, 183.

Baby-tender, 57.

Bandage, belly,

See Clothing.

Barley,

See under Diet.

Baths,

Alcohol and cold water, 103.

Mustard, 61, 67, 136.

Salt, 42. See Skin.

Temperature, 142.

Warm, 40, 100, 149.

Beef and barley soup,

See under Diet.

Beef juice,

See under Diet.

Beef, raw, effects of, 72 (XIII).

Behavior,

Accuracy of records kept, 18.

Health in danger, 8, 181.

How recorded, 15.

In health, 8.

On record sheet, 17.

Record, 26, 27, 29, 30 (III), 32 (IV),

34 (V), 42, 40 (VI), 48, 44 (VII),

50 (VIII), 52 (IX), 67, 60 (X),

68 (XI), 70 (XII), 72 (XIII),

74 (XIV), 76 (XV), 77 (XVI), 78

(XVII), 80 (XVIII), 80 (XVIII),

82 (XIX), 88 (XX), 92, 93, 90

(XXI), 94 (XXII), 96 (XXIII),

98 (XXIV), 109 (XXV).

Summary, 149, 150, 116 (XXVI 9).

Teething, influence on, 62, 95, 107,

160.

Benzoin (tincture of),

See Medicines.

See under Cold.

Boracic acid,

See Medicines.

See Eye.

See Skin.

Bottle, learning to suck from, 54, 55.

Bread,

Dried.

Toasted.

Uncooked,

Zwiebach.

See under Diet.

Breast meals,

See under Diet.

Caldwell, Dr. William E.,

Consulted, 56, 61.

Official position, 19, 23.

Care and Feeding of Children, Dr.

Holt used as a reference book.

See Dr. Holt.

Camphorated oil,

See Medicines.

See Cold.

Castor oil,

See Medicines.

See Cold,

See Fever.

See Feces.

Celery,

See under Diet.

Cereals,

See under Diet.

Chamber, the use of, 141, 142.

Charts, 11, 18, 21.

I. 1st month, 22.

II. 2d month, 26.

III. 3d month, 30.

IV. 4th month, 32.

V. 5th month, 34.

VI. 6th month, 40.

- VII. 7th month, 44.
 VIII. 8th month, 50.
 IX. 9th month, 52.
 IX (continued). Formulas, 58.
 X. 10th month, 60.
 XI. 11th month, 68.
 XII. 12th month, 70.
 XIII. 13th month, 72.
 XIV. 14th month, 74.
 XV. 15th month, 76.
 XVI. 16th month, 77.
 XVII. 17th month, 78.
 XVIII. 18th month, 80.
 XIX. 19th month, 82.
 XX. 20th month, 88.
 XXI. 21st month, 90.
 XXII. 22d month, 94.
 XXIII. 23d month, 96.
 XXIV. 24th month, 98.
 XXV. 25th month, 110.
 XXVI. Summaries tabulated, 116.
 XXVII. Diet, 122.
 XXVIII. Feces, disturbances, remedies, 132.
 XXIX. Feces, character, 133.
 XXX. Skin, 134a.
 XXXI. Cold, 136.
 XXXII. Weight, 141.
 XXXIII. Length of body and foot, 146.
 XXXIV. Head measurements, 148.
 XXXV. Neck measurements, 150.
 XXXVI. Girths, head, 9th rib, hips, chest, waist, 154.
 XXXVII. Diet, 122.
 XXXVIII. The teeth, 159.
Checks.
 In health, 8, 10, 55, 56.
 In illness, 8, 42.
Chest.
 See under Measurements.
Chittenden, Prof., consulted, 14.
Chocolate, sweet.
 See under Diet.
Circumcision, 179.
Clothing, 9, 12, 169-177.
 Arnold knit goods, 171, 173.
 Bandage, 169, 171.
 Dress, 171.
 Diapers, 173.
 Drawers, 173.
 Fisher (Prof.) of Yale, consulted, 177.
 Hat, 175.
 Hood, 175.
 Jacket, cashmere, 171.
 Woolen, 171.
 Layette, 169, 171.
 Leggins, 173.
 Petticoat (skirt), 171.
 Principles underlying dressing, 175, 177.
 Rompers, 173.
 Sandals, educator, 173.
 Shirt, 171.
 Slip, 171.
 Stockings, 175.
 Sweater, 173.
Cold cream.
 See Medicines.
 See Skin.
Colds.
 Absent in health, 8.
 Appearance, 23, 59, 61, 62, 67, 60
 (X), 70 (XII), 75, 76 (XV), 86,
 88 (XX), 93, 94 (XXII), 95, 96
 (XXIII), 105, 106, 98 (XXIV).
 Frequency, 147-149, 136 (XXXI).
 How recorded, 15.
 Late symptom of indigestion, 10.
 On record sheet, 17.
 Problem of, 21, 67.
 Treatment, 136 (XXXI).
 Baths.
 Mustard, 61, 67, 136.
 Warm, 149.
 Benzoin (fumes), 62, 149.
 Castor oil, 61, 62, 67, 106, 149.
 Camphorated oil, 67, 106, 136.
 Diet, 61, 86, 93, 94, 149, 136.
 Gray powder tablets, 106, 149, 136.
 Menthol and aboline, 61, 62, 67,
 86, 106, 149.
 Mucol, 61, 86, 106, 136, 143, 149.
 Mustard plaster, 106, 149, 136.
 Tablets, antimony and ipecac,
 106, 149.
 Common-sense way, 11.
 Colic, 181.
 Composition of food,
 See under Diet.
 Conclusions, 21, 183, 181.
 Condition of skin,
 See Skin.
 "Conditions present are the best
 guide," Dr. Holt, 12, 27.
 Constipation, 15, 64, 95, 182.
Cornstarch.
 See Medicines.
 See Skin.
Crackers, Educator, Huntley, Palm-
 er, Biscuit.
 See under Diet.
Cream.
 See Milk, under Diet.
Crust.
 See Bread, under Diet.
Crying.
 Accuracy of record, 19.
 Causes, 151, 152, 160, 161.
 Frequency, 152, 116 (XXVI 9).
 How recorded, 17.
 Record, 29, 26 (II), 30 (III), 32
 (IV), 34 (V), 42, 40 (VI), 48, 44
 (VII), 49, 50 (VIII), 51, 52 (IX),
 54, 56, 59, 60 (X), 68 (XI), 70
 (XII), 72 (XIII), 74 (XIV), 76
 (XV), 77 (XVI), 78 (XVII), 80
 (XVIII), 82 (XIX), 88 (XX),
 93, 90 (XXI), 94 (XXII), 96
 (XXIII), 98 (XXIV), 106, 109
 (XXV).

- Summary, 151, 152, 116 (XXVI 9).
 Data, accuracy of, 18.
 Dewey, John, dedication.
 Diapers,
 See Clothing.
 Diet,
 Accurately measured, 10.
 Average, poor guide, 7.
 Composition, 120-130, 122 (XXVII).
 Apple Sauce, 88, 90 (XXI), 94 (XXII), 96 (XXIII), summary, 122 (XXVII).
 Beef, chopped, 88 (XX), 98 (XXIV), 109 (XXV), summary, 122 (XXVII).
 Beef and barley soup, 98 (XXIV), summary, 122 (XXVII), 127.
 Beef juice, 82 (XIX), 127.
 Bread, dried, 72 (XIII), 77 (XVI), 98 (XXIV), 122 (XXVII, summary).
 Bread, end crust, 77 (XVI), 78 (XVII), 80 (XVIII), 90 (XXI), 94 (XXII), 96 (XXIII), 98 (XXIV), 109 (XXV), 123, 122 (XXVII, summary).
 Bread, toasted, 96 (XXIII), 123, 122 (XXVII, summary).
 Bread, uncooked, 88 (XX), 128, 140.
 Bread, zwiebach, 74, 76 (XV), 80 (XVIII), 82 (XIX), 88 (XX), 90 (XXI), 94 (XXII), 96 (XXIII), 98 (XXIV), 109 (XXV), 123, 122 (XXVII, summary), 140, 141.
 Celery, 96 (XXIII), 128.
 Cereals,
 Barley, effect of, 63, 139, 140, 141.
 Barley in diet, 53, 56, 60, 61, 62, 63, 64, 68 (XI), 70 (XII), 72 (XIII), 74 (XIV), 76 (XV), 77 (XVI), 78 (XVII), 80 (XVIII), 82 (XIX), 88 (XX), 90 (XXI), 94 (XVII), 96 (XXIII), 98 (XXIV), Summary 122 (XXVII) and 123.
 Farina, 75, 77 (XVI), 78 (XVII), 80 (XVIII), 82 (XIX), 88 (XX), 90 (XXI), 94 (XXII), 96 (XXIII), 98 (XXIV), Summary 122 (XXVII) and 123, 140, 141.
 Hominy, 79, 80 (XVIII), 82 (XIX), 88 (XX), 90 (XXI), 98 (XXIV), 109 (XXV), Summary 122 (XXVII) and 126.
 Oatmeal, effect of, 64, 75, 76 (XV), 139, 140, 141.
 Oatmeal on trial, 60 (X), 63-64, 70 (XII), 74 (XIV), 76 (XV), 77 (XVI), 78 (XVII).
 Oatmeal used in diet, 79, 80 (XVIII), 94 (XXII), 96 (XXIII), 109 (XXV), Summary 122 (XXVII) and 125, 127.
 Rice, 79, 80 (XVIII), 82 (XIX), 88 (XX), 90 (XXI), 96 (XXIII), 98 (XXIV), 109 (XXV), Summary 122 (XXVII) and 126.
 Triscuit, 80 (XVIII), Summary 122 (XXVII) and 126.
 Wheat, cream of, 76 (XV), 77 (XVI), 88 (XX), 90 (XXI), 94 (XXII), 98 (XXIV), Summary 122 (XXVII) and 126.
 Wheat flour, prepared, 60 (X), 64, 75, 76 (XV), Summary 122 (XXVII) and 125.
 Wheat, shredded, 94 (XXII), 96 (XXIII), 109 (XXV), Summary 122 (XXVII) and 126, 140, 141.
 Wheatena, 76 (XV), 76 (XVII), 79, 80 (XVIII), 82 (XIX), 88 (XX), 90 (XXI), 94 (XXII), 96 (XXIII), 98 (XXIV), 109 (XXV), Summary 122 (XXVII) and 126, 140, 141.
 Chocolate, sweet, 108 (XXV), Summary 122 (XXVII) and 127.
 Crackers, educator, 74 (XIV), 76 (XV), 77 (XVI), 78 (XVII), 94 (XXII), 96 (XXIII), 98 (XXIV), Summary 122 (XXVII) and 123.
 Crackers, Huntley Palmer Biscuit, 78 (XVII), Summary 122 (XXVII) and 123.
 Egg, 88 (XX), 90 (XXI), 94 (XXII), 96 (XXIII), 98 (XXIV), Summary 122 (XXVII) and 127, 128.
 Egg custard, 88 (XX), 90 (XXI), 109 (XXV), Summary 122 (XXVII) and 126.
 Grape juice, 94 (XXII), Summary 127.
 Grapes, white, 88 (XX), 94 (XXII), Summary 128.
 Jelly, 90 (XXI), 96 (XXIII), 98 (XXIV), 109 (XXV), Summary 122 (XXVII) and 127.
 Lime water, 52 (IX), 60 (X), 68 (XI), 70 (XII), 72 (XIII), 74 (XIV), 76 (XV), 98 (XXIV), Summary 122 (XXVII) and 122.
 Liquids,
 Orange juice, how recorded, 15, 62, 60 (X), 66, 68 (XI), 70 (XII), 72 (XIII), 74 (XIV), 76 (XV), 77 (XVI), 78 (XVII), 80 (XVIII), 82 (XIX), 88 (XX), 90 (XXI) and 92, 94 (XXII), 96 (XXIII), 98 (XXIV) and 102, 109 (XXV), Summary 122 (XXVII) and 128.
 Prune juice, how recorded, 15, 78 (XVII), 82 (XIX), 88

- (XX), 109 (XXV), Summary 122 (XXVII) and 129.
- Water,
Pure, 9.
- Record, 34 (V), 43, 40 (VI), 38, 44 (VII), 50 (VIII), 52 (IX), 60 (X) and 66, 68 (XI), 70 (XII), 72 (XIII), 74 (XIV), 76 (XV), 77 (XVI), 78 (XVII), 80 (XVIII), 82 (XIX), 88 (XX), 90 (XXI), 92, 94 (XXII), 96 (XXIII), 98 (XXIV), 102, 109 (XXV) and 111, Summary 122 (XXVII) and 129.
- Warm, importance of, 43.
- Milk,
Certified, 52 (IX), 53, 60 (X), 68 (XI), 70 (XII), 72 (XIII), 74 (XIV), Summary 121, 123, 122 (XXVII).
- Change from 10% to 7% to 4%, 75 (XIII) and 72, and 122 (XXVII).
- Condensed, 96 (XXIII), 98 (XXIV), 123.
- Cream, 108 (XXV), Summary 122 (XXVII) and 123.
- Pasteurized, 74 (XIV), 76 (XV), 77 (XVI), 78 (XVII), 80 (XVIII), 82 (XIX), 88 (XX), 90 (XXI), 94 (XXII), 96 (XXIII), 98 (XXIV), 109 (XXV), Summary 122 (XXVII) and 121 and 123, 140.
- Sterilized, 96 (XXIII), 140.
- Summary, 121, 122 (XXVII), 123.
- Macaroni, 94 (XXII), 96 (XXIII), 122 (XXVII, Summary).
- Macaroni cooked with beef, 98 (XXIV), 109 (XXV), Summary 127.
- Meat, 98 (XXIV), 109 (XXV), Summary 122 (XXVII) and 127.
- Milk, breast,
Accuracy of time, 18.
- Diet to stimulate flow, 36, 54.
- Disturbed, 139.
- Food that may have disturbed, 33, 54, Summary 139.
- How recorded, 15.
- Summary, 120.
- Supply meager, 36, 40, 54.
- Time at breast, 120.
- Time nursing begins, 17.
- Time nursing compared with Holt, 24.
- Variations among women, in flow of, 24.
- Record, 1st mo., 22 (I), 23, 24; 2d mo., 25, 26 (II), 27, 28; 2d mo., 30 (III); 4th mo., 32 (IV), 33; 5th mo., 34 (V); 6th mo., 38, 40 (VI); 7th mo., 44 (VII), 46; 8th mo., 50 (VIII), 51; 9th mo., 52 (IX), 54, 55, 57; 10th mo., 59, 60 (X), 62, 63, 64, 66.
- Resting while nursing, 17, 18.
- Mutton broth, 94 (XXII), 127, 129.
- Potato, sweet, 94 (XXII), 127.
- Prunes, 88 (XX), 94 (XXII), 96 (XXIII), 98 (XXIV), 109 (XXV), Summary 122 (XXVII) and 172.
- Pudding,
Apple tapioca, 94 (XXII) and 127.
- Bread, 94 (XXII), Summary 122 (XXVII) and 127.
- Rice, 90 (XXI, Summary 122 (XXVII) and 127.
- Tapioca, 90 (XXI), Summary 122 (XXVII) and 126.
- Rice cooked with chicken, 98 (XXIV), Summary 122 (XXVII) and 127.
- Peaches, preserved, 96 (XXIII), Summary 122 (XXVII) and 127.
- Rice cakes, Japanese, 90 (XXI), 127.
- Soup, chicken, 96 (XXIII), 128.
- Sugar, granulated, 74 (XIV), 88 (XX), 90 (XXI), 94 (XXII), 96 (XXIII), 98 (XXIV), 109 (XXV), Summary 122 (XXVII) and 123.
- Sugar, milk, 52 (IX), 53, 60 (X), 68 (XI), 70 (XII), 72 (XIII), 74 (XIV), 76 (XV), 77 (XVI), 78 (XVII), 80 (XVIII), 82 (XIX), 88 (XX), Summary 122 (XXVII) and 123.
- Summary, 120-130, 122 (XXVII).
- Dangers from not changing in time, 12.
- Effect on skin, 132 (XXX), 145-147.
- Evidences of right and wrong diet, 9, 10.
- How recorded, 15.
- How to judge, 12.
- Importance of, 9.
- On record sheet, 17.
- Quantity, 9, 10, 15.
- Compared with Holt, 63, 116 (XXVI 3), 120, 121.
- Record,
1st month, 22 (I),
2d month, 26 (II), 28,
3d month, 30 (III), 33,
4th month, 32 (IV),
5th month, 34 (V),
6th month, 40 (VI),
7th month, 44 (VII), 46,
8th month, 50 (VIII),
9th month, 51, 52 (IX), 53 (IX Con.), 54, 55, 56,
10th month, 60 (X), 63, 64, 66,
11th month, 68 (XI).

- 12th month, 70 (XII).
 13th month, 72 (XIII), 75.
 14th month, 74 (XIV), 75.
 15th month, 76 (XV), 75.
 16th month, 77 (XVI).
 17th month, 78 (XVII).
 18th month, 80 (XVIII), 79.
 19th month, 82 (XIX).
 20th month, 88 (XX).
 21st month, 86, 90 (XXI), 91, 92.
 22d month, 94 (XXII), 95.
 23d month, 96 (XXIII).
 24th month, 98 (XXIV), 101, 102.
 25th month, 108, 109 (XXV), 111.
 Tending to make feces loose, 100.
 Tending to make feces constipated, 95.
 When to change, 10.
 Dietary, 11.
 Digestion, evidences of good, 8, 16.
 Relation to disposition, 149.
 Upset by teething, 10.
 Digestive tract, controlling factor in health, 27.
 Importance of keeping it in order, 12.
 Disposition,
 See Behavior.
 Doctors, 11, 14, 19, 181.
 Caldwell, Dr. William E., 19.
 Holt, Dr. L. Emmett, 14.
 McCastline, Dr. William, 19.
 Von Someren, Dr., 14.
 Drawers,
 See under Clothing.
 Dress,
 See Clothing.
 Drinks,
 See Water, Orange Juice, Prune Juice.
 Ears, cleaning, 143.
 Egg,
 See under Diet.
 Egg custard,
 See under Diet.
 Enema, 24th month, 103.
 Evidences of health,
 See Health, evidences of.
 Excreta,
 See Feces.
 Exercise, 177.
 Eye, in health, 8.
 Wash, 143.
 Face, sore,
 See Skin.
 Farina,
 See under Diet.
 Fasting, 9th month, 57.
 Feces,
 Abnormal, 8, 135, 141, 181.
 Accuracy, 18.
 Character, Summary, 134, 133 (XXIX).
 Foods tending to loosen, 100.
 Foods tending to constipate, 95.
 Frequency, Summary, 131, 116 (XXVI 6).
 How recorded, 15.
 Irregularities (causes of), 135-137, 138-141, 132 (XXVIII 2), 160, 161.
 Normal, 8, 134, 135, 141.
 On record sheet, 17.
 Record, 22 (I), 23, 26 (II), 29, 30 (III), 33, 32 (IV), 33, 34 (IV), 38, 39, 44 (VII), 46, 50 (VIII), 52 (IX), 51, 55, 56, 57, 60 (X), 61, 62, 66, 68 (XI), 70 (XII), 72 (XIII), 74 (XIV), 76 (XV), 77 (XVI), 78 (XVII), 80 (XVIII), 82 (XIX), 88 (XX), 90 (XXI), 94 (XXII), 96 (XXIII), 95, 98 (XXIV), 105, 109 (XXV), 112.
 Remedies, Summary, 122 (XXVII), 130, 138-141, 132 (XXVIII 3).
 Suppositories, 134.
 Fever, 19, 56, 57.
 Late evidence of indigestion, 10.
 Temperature taken, 10.
 Treatment, 56, 57.
 22d month, 93.
 24th month, 100, 103, 104.
 Fisher (Prof.) of Yale, 177.
 Flesh, 181.
 Sore, see Skin.
 Food,
 See under Diet.
 Foot,
 See under Measurements.
 Frequency of feces,
 See Feces, frequency.
 General Remarks,
 See Remarks.
 Grape juice,
 See under Diet.
 Grapes, white,
 See under Diet.
 Gray powder tablets,
 See Medicines.
 See Fever.
 Growth, 8, 11.
 See Physical achievements.
 In health, 8.
 Hat,
 See under Clothing.
 Head,
 See under Measurements.
 Health, evidences of, 8.
 Maintain, 12, 14, 182.
 In danger, 8.
 Height,
 See under Measurements.
 Heritage, 179.
 Hiccoughs, cause, 16.
 Treatment, 16.
 On record sheet, 17.
 Hips,
 See under Measurements.
 Holt, Dr. L. Emmet, references to care and feeding of children, 14, 24, 25, 27, 53, 54, 63, 144.

- Hominy.
 See under Diet.
 Hood.
 See under Clothing.
 Horizontal bar, 33.
 Hospital, 23.
 Indigestion, 10, 182.
 See also Behavior.
 Cold.
 Crying.
 Feces.
 Skin.
 Vomiting.
 Intervals between meals.
 See Meals, intervals.
 Intestines, 9, 10.
 See also Feces.
 Jacket.
 See under Clothing.
 Jelly.
 See under Diet.
 Lanoline.
 See Skin.
 See Medicines.
 Laughed, first times, 27, 33.
 Layette.
 See under Clothing.
 Leggins.
 See under Clothing.
 Length of time nursing at breast.
 See under Diet.
 Lime water.
 See under Diet.
 Liquid alboline.
 See Medicines.
 See Skin.
 Macaroni cooked with beef.
 See under Diet.
 McCastline, Dr. William, consulted,
 19, 36, 61, 67.
 Took measurements, 152.
 Meals, intervals between.
 How recorded.
 On record sheet.
 Record, 1st mo., 22, 24; 2d mo., 25,
 27; 3d mo., 30, 33; 4th mo., 32,
 33; 5th mo., 33, 34; 6th mo., 38,
 40; 7th mo., 43, 44; 8th mo., 50;
 9th mo., 52; 10th mo., 60, 63; 11th
 mo., 68; 12th mo., 70; 13th mo.,
 72; 14th mo., 74; 15th mo., 76;
 16th mo., 77; 17th mo., 78; 18th
 mo., 80; 19th mo., 82; 20th mo.,
 88; 21st mo., 86, 90; 22d mo., 94;
 23d mo., 96; 24th mo., 98, 100, 101;
 25th mo., 108, 109; Summary 118-
 120, 122 (XXVI 2).
 Number a day.
 How to be recorded, 15.
 1st mo., 22, 24; 2d mo., 26, 27; 3d
 mo., 30, 33; 4th mo., 32, 33; 5th
 mo., 33, 34; 6th mo., 38, 40; 7th
 mo., 43, 44; 8th mo., 50; 9th
 mo., 52; 10th mo., 60, 63; 11th
 mo., 68; 12th mo., 70; 13th mo.,
 72; 14th mo., 74; 15th mo., 76;
 16th mo., 77; 17th mo., 78; 18th
 mo., 80; 19th mo., 82; 20th mo.,
 88; 21st mo., 86, 90; 22d mo., 94;
 23d mo., 96; 24th mo., 98, 100, 101;
 25th mo., 108, 109; Summary 118-
 120, 122 (XXVI 2).
 Time nursing.
 See under Diet.
 Measurements (other than weight,
 153, 23).
 Abdomen, 156 (XXXVII).
 Chest, 154 (XXXVI), 156 (XXXVII).
 Foot, 146 (XXXIII).
 Head, 154 (XXXVI).
 Height, 146 (XXXIII).
 Hips, 154 (XXXVI), 156 (XXXVII).
 Neck, 150 (XXXV).
 Rib (ninth), 154 (XXXVI), 156
 (XXXVII).
 Shoulders, 156 (XXXVII).
 Waist, 154 (XXXVI).
 Meat.
 See under Diet.
 Medication for.
 Cold, 61, 62, 67, 86, 106.
 Fever, 56, 57, 86, 100.
 Indigestion, 56, 57, 139.
 Intestines, 122 (XXVII), 124
 (XXVIII 3), 129, 138, 139 to 141.
 Scalp, 105, Summary 145, 147.
 Skin, 15, 92, 132 (XXX).
 Summary, 142, 143, 145, 147.
 Teeth, 11, 93, 100, 160.
 Medicines.
 Alboline, 143, 145, 147, 132 (XXX).
 See Cold.
 Antimony and ipecac, 106, 149.
 See Cold.
 Benzoine (compound tincture of),
 62, 149.
 See Cold.
 Boric acid, 143.
 See Eye.
 Boric acid, 143.
 See Skin.
 Camphorated oil, 67, 106.
 See Cold.
 Castor oil, 56, 57, 61, 62, 64, 67, 100,
 103, 104, 106, 136 (XXXI). Sum-
 mary 130 and 122 (XXVII), 139,
 140, 141, 149.
 See Cold, Fever, Feces.
 Cold cream, 145, 147, 132 (XXX).
 See Skin.
 Cornstarch, 143.
 See Skin.
 Gray powder tablets.
 To reduce fever, 56, 57, 86, 100,
 103, 106, Summary, 130, 136, 149.
 For intestinal condition, Sum-
 mary 122 (XXVII), 139.
 See Fever.

- See Feces.
 Liquid alboline (see Skin, Scalp), 105.
 Lanoline, 145, 147, 132 (XXX).
 See Skin.
 Menthol and alboline, 61, 62, 67, 86, 106, 149.
 See Cold.
 Mucol, 61, 86, 106, 149, 136, 143.
 See Cold.
 Mustard plaster, 106, 149, 136.
 See Cold.
 Oil of cade, 145, 147, 132 (XXX).
 See Skin.
 Olive oil, 33, 105, 145, 147, 132 (XXX).
 See Breast Milk.
 See Skin.
 Resorcin, 145, 147, 132 (XXX).
 See Skin.
 Sulphur, 145, 147, 132 (XXX).
 See Skin.
 Syrup of rhubarb, 130.
 See 1st mo. Feces.
 Tannic acid, 11, 93, 100, 160.
 See Teeth.
 Vaseline, 145, 147, 132 (XXX).
 See Skin.
 Violet emollient, 145, 147, 132 (XXX).
 See Skin.
 Zinc ointment, 92, 143, 145, 147, 132 (XXX).
 See Skin.
 Menthol and alboline,
 See Medicines.
 See Cold.
 Milk, breast,
 See under Diet.
 Milk,
 Certified,
 Change from 10% to 4%,
 Condensed,
 Cream,
 Pasteurized,
 Sterilized,
 See under Diet.
 Months, selected, 21.
 "Mother love," 183.
 Mother, consulted, 14.
 Mother's problem, 14.
 Mucol,
 See Medicines.
 See Cold.
 Mustard plaster,
 See Medicines.
 See Cold.
 Mutton broth,
 See Diet.
 Naps,
 See Sleep.
 Neck,
 See under Measurements.
 Number of meals a day,
 See Meals, number a day.
 Nose, cleaning, 143.
 Oatmeal,
 See under Diet.
 Olive oil,
 See Medicines.
 See Breast milk.
 See Skin.
 Oil of cade,
 See Medicines.
 See Skin.
 Orange juice,
 See under Diet.
 Overfeeding, 9, 21, 25, 36, 40, 49, 55, 56.
 Pain, teething,
 See Teething.
 Peaches,
 See under Diet.
 Petticoat,
 See Clothing.
 Photographs, 19.
 Physical achievements,
 Accuracy of record, 19.
 Record, 2d mo., 27, 29; 3d mo., 33;
 4th mo., 33; 5th mo., 33; 6th mo.,
 42, 43; 7th mo., 43, 48, 49; 9th
 mo., 57; 10th mo., 69; 12th mo.,
 69; 14th mo., 75; 19th mo., 79;
 21st mo., 93; 23d mo., 95; 24th
 mo., 107.
 Summary, 155, 157, 158, 159, 176
 (Pl. I), 178 (Pl. II), 180 (Pl. III).
 Physical activity, 8.
 Pimples,
 See Skin.
 Powder, for flesh, 142, 143.
 Potato, sweet,
 See Diet.
 Principles underlying dressing, 175,
 177.
 Prunes,
 See Diet.
 Prune juice,
 See under Diet.
 Problem of,
 Baby-raising (baby-culture), 13, 14,
 183.
 Cold, 21, 67.
 Mother's problem, 13, 14, 183.
 Overfeeding, 9, 21, 36, 40, 49, 55, 56.
 Regurgitation, 21, 25, 27.
 Teething, 21, 95, 107, 160.
 Weaning, 21, 51, 69.
 Puddings,
 Apple tapioca,
 Bread,
 Rice,
 Tapioca,
 See under Diet.
 Rash,
 See under Skin.
 Regurgitation,
 How recorded, 15, 18.
 Evidence of wrong feeding, 9.

- On record sheet, 17.
 Problem of, 21, 25, 27.
 1st month, 22 (I), 23, 24.
 2d month, 25, 26 (II), 27, 28.
 3d month, 30 (III), 33.
 4th month, 32 (IV), 33.
 5th month, 33, 34 (V).
 6th month, 38, 40 (VI).
 7th month, 44 (VII), 46.
 8th month, 50 (VIII).
 9th month, 52 (IX).
 10th month, 59, 60 (X), 66.
 Summary, 116 (XXVI 4a), 129.
 Records, 11, 14, 16, 17, 18, 21, 23, 183.
 Remarks, general, 15.
 Circumcision, 179.
 Clothing, 169-177.
 See Clothing.
 Exercise, 177.
 Heritage, 179.
 Sucking thumb, 93, 113, 177.
 Vocabulary, 161-169.
 Resorcin.
 See Medicines.
 See Skin.
 Resting while nursing, 18.
 Restlessness.
 See Teething.
 Rib (ninth).
 See under Measurements.
 Rice.
 See under Diet.
 Rice cakes, Japanese.
 See under Diet.
 Rompers.
 See under Clothing.
 Sandals.
 See under Clothing.
 Scalp.
 See Skin.
 School of Mothercraft, 20.
 Shirt.
 See under Clothing.
 Shoulders.
 See under Measurements.
 Skin.
 Diet, 132 (XXX), 145, 147.
 Healthy, 8.
 How recorded, 15.
 Treatment of.
 See Medication.
 Medication.
 Alboline, 143, 145, 147, 134a (XXX).
 Cold cream, 145, 147, 134a (XXX).
 Lanoline, 145, 147, 134a (XXX).
 Oil of cade, 145, 147, 134a (XXX).
 Olive oil, for scalp, 105, 145, 147, 134a (XXX).
 Resorcin, 145, 147, 134a (XXX).
 Salt baths, 145, 147, 134a (XXX).
 Sulphur, 145, 147, 134a (XXX).
 Vaseline (white), 145, 147, 134a (XXX).
 Violet emollient, 145, 147, 134a (XXX).
 Zinc ointment, 145, 147, 134a (XXX).
 On record sheet, 17.
 Record, 29, 33, 38, 39, 40 (VI), 42, 43, 44 (VII), 48, 50 (VIII), 52 (IX), 60 (X), 68 (XI), 70 (XII), 72 (XIII), 74 (XIV), 76 (XV), 78 (XVII), 90 (XXI), 92, 98 (XXIV), 105.
 Treatment in health, 142, 143.
 Troubles, 143, 147, 132 (XXX).
 Anus, sore, 147.
 Face, sore, 147.
 Flesh, sore, 147.
 Pimples, 8, 10, 15, 18, Summary 145.
 Rash.
 How recorded, 15.
 Record, 1st mo., 27; 2d mo., 29; 6th mo., 42; 10th mo., 61, 62; Summary, 145, 132 (XXX).
 Scalp.
 Daily care, 143.
 Record, 6th mo., 40 (VI 42); 12th mo., 70 (XII); 13th mo., 72 (XIII); 24th mo., 105; Summary, 132 (XXX), 145, 147, Summary, 132 (XXX), 145, 147.
 Slip.
 See under Clothing.
 Sleep.
 How recorded, 15.
 In health, 8.
 On record sheet, 17.
 Record, 22 (I), 23, 25, 26 (II), 29, 30 (III), 32 (IV), 34 (V), 38, 39, 40 (VI), 46, 44 (VII), 50 (VIII), 51, 59, 52 (IX), 60 (X), 61, 66, 68 (XI), 70 (XII), 72 (XIII), 74 (XIV), 76 (XV), 77 (XVI), 78 (XVII), 80 (XVIII), 82 (XIX), 88 (XX), 90 (XXI), 92, 94 (XXII), 96 (XXIII), 98 (XXIV), 104, 105, 109 (XXV), 112.
 Summary, 130, 116 (XXVI 5).
 Soap.
 Effects of eating, 72 (XIII),
 Ivory, for washing, 142.
 Soup, chicken.
 See under Diet.
 Stockings, 175.
 Stomach, 9.
 Strength, 33.
 Sucking the Thumb, 177.
 Sugar, granulated, milk,
 See under Diet.
 Sulphur.
 See Skin.
 See Medicines.
 Summary of each month: 2d, 27; 3d, 33; 4th, 33; 5th, 33; 6th, 36; 7th, 43; 8th, 49; 9th, 51; 10th, 59; 11th, 69; 12th, 69; 13th, 75; 14th, 75; 15th, 75; 16th, 75; 17th, 79; 18th, 79; 19th, 79; 20th, 86; 21st, 86; 22d, 93; 23d, 95; 24th, 95; 25th, 107.

- Suppositories, 134.
 Sweater,
 See under Clothing.
 Syrup of rhubarb, 130.
 See Medicines.
 See 1st month.
- Tables of averages, misleading, 7.
- Tapioca,
 See Pudding under Diet.
- Temperature, 16, 181.
- Tannic acid,
 See Medicines.
 See Teething.
- Teething, teeth.
 Appearance, 159 (XXXVIII).
 Beginning to show, 57.
 Disturbed digestion, 10.
 Evidence, of teething pains, 75, 100, 160.
 How recorded, 15.
 Intestinal irregularities while teething, 77, 78, 79, 105, 161.
 Not responsible for all, 11.
 Problem of teething, 21, 95-107, 160.
 Record, 69, 93, 113.
 Restlessness, 62.
 Summary, 160-161.
 Tannic acid, 11, 93-100, 160.
 Upsetting regular living, 52.
- Thinking, inductive, 13.
- Thumb, sucking the, 93, 177.
- Time nursing at breast,
 See under Diet.
- Time nursing begins,
 See under Diet.
- Tongue, 8, 10, 16.
- Triscuit,
 See under Diet.
- Underfeeding, 51, 55.
 6th month, 36.
 8th month, 51.
 9th month, 55.
- Variability, 184.
- Vaseline,
 See Medicines.
- See Skin.
- Violet emollient,
 See Medicines.
- See Skin.
- Vocabulary, 79, 161-169.
- Vomiting.
 Evidence of wrong feeding, 8.
 How recorded, 15.
 On record sheet, 17, 18.
 Record, 23, 26 (II), 28, 30 (III), 32 (IV), 34, (V), 38, 40 (VI), 44 (VII), 46, 50 (VIII), 52 (IX), 55, 60 (X), 66, 68 (XI), 70 (XII), 72 (XIII), 75, 76 (XV), 77 (XVI), 78 (XVII), 80 (XVIII), 82 (XIX), 86, 90 (XXI), 92, 98 (XXIV), 100.
 Summary, 116 (XXVI 4b), 130.
- Von Someren, Dr., consulted, 14.
- Waist,
 See under Measurements.
- Water,
 See under Diet.
- Weaning, 21, 51, 52, 59.
- Weight.
 Health in danger, 8.
 How recorded, 15.
 Increasing weight, 9.
 On record sheet, 17.
 Record, 1st mo., 23; 2d mo., 25, 29; 3d mo., 33; 4th mo., 33; 6th mo., 38, 42; 7th month, 48; 8th mo., 49; 9th mo., 57; 10th mo., 69; 21st mo., 93; 24th mo., 107; 25th mo., 112, 144 (XXXII).
 Summary, 152, 153 and 144 (XXXII).
- Wheat,
 See under Diet.
- Wheat flour, prepared,
 See under Diet.
- Wheat, shredded,
 See under Diet.
- Wheatena,
 See under Diet.
- Zinc ointment, 92, 143.
 See Skin.
 See Medicines.



Educational Psychology Monographs

Edited by Guy Montrose Whipple



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There are few elementary school subjects in which inefficiency is more surely detected and reprobated in later life, and in the teaching of which the elementary schools are charged with more extravagant waste of time, than spelling. 7.22 per cent. of the time of the child in the elementary schools in ten of our largest cities is devoted to the study of spelling, and yet the complaint continues to be almost universally voiced that the elementary and secondary school graduates have not learned how to spell.

School superintendents and teachers have felt the justice and sting of these criticisms, and have attempted to provide a remedy either by increasing the time devoted to spelling or by changing the methods of teaching. The results, however, have not in all cases proved satisfactory.

Dr. Wallin, who has been offering courses in educational psychology and the principles of teaching in schools of education for a number of years, points out briefly in this monograph some of the fallacies involved in the exclusive use of the incidental method of teaching spelling, based upon the psychological principles which condition the reduction of mechanical subject-matter to the plane of automatism (spelling is of an instrumental nature). By means of the results of the very researches made in the past to demonstrate the adequacy of the incidental method, it is shown that its use has not justified the claims made in its behalf. On the other hand, the superiority of a spelling drill technique, based upon the laws of habit formation, is shown, partly by the author's own investigation and partly by the results of a thoroughgoing application of the method under control conditions during four years in a large school system.

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Few educational questions have excited more general interest in recent years than that of the age at which children should commence their attendance at school. On the one side we have the rule-of-three conclusion, felt rather than expressed as an inference, that the more teaching the child gets and the sooner he begins school the more progress he is sure to make. On the other we have had a strong feeling, now growing in intensity and range, that attendance in school, particularly in England, begins too early and that there is an educational disadvantage in commencing as soon as the children of Great Britain do. While this investigation by Mr. Winch has special reference to England, where the school life begins at a much earlier period than in either America or Germany, the results set forth by the author are of vital interest to all who have to do with the education of children.

The effect of age of entry is considered from several points of view: 1. Does early entry at school enable the pupil to make more rapid advancement in school standing than entry at a later age? In other words, in a given grade are those pupils who entered school earlier found to constitute the younger portion of the class? 2. In the same grade some pupils may be doing work of a high degree of efficiency, others work of an inferior quality. To what extent does early entry correlate with high efficiency when tested by examinations? 3. How far does early entry depend upon social circumstances? 4. What is the influence of early entry upon the subsequent behavior of pupils and upon their attentiveness to school work?

The results of Mr. Winch's inquiry are now published for the first time. Some of them have been privately circulated, and a few of the tables, together with the methods employed, were discussed some years ago at a meeting of the Inspectors of the Education Committee for London.

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Mental Fatigue

"Die
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OFFNER,**

Translated
from the
German by

**GUY
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Price:

12mo, cloth,
viii, 133 pages.
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This noteworthy monograph is a comprehensive exposition of the nature of mental fatigue, of the methods proposed for measuring it, and of the results that have thus been obtained, with special reference to their application to classroom problems.

The text is an amplification of a lecture delivered before the Munich association of gymnasial teachers, and its primary purpose is not to contribute to the experimental investigation of fatigue, but to inform and to interest teachers.

The following are among the topics discussed: The nature and forms of fatigue, the symptoms of fatigue, the measurement of fatigue by physiological and by psychological methods, the factors other than fatigue that affect efficiency of mental work—practice, adaptation, warming-up, spurts, enthusiasm, etc.—and the laws of fatigue.

In considering the application of these laws to school-room problems, attention is given to the dependence of fatigue upon individual differences, upon age, puberty, the length of lesson periods, the number of lessons per day, the day of the week, the introduction of various rest pauses (recesses, holidays, vacations, etc.), change of occupation, the fatigue coefficient of the different studies, also to hygienic arrangement of the school program and other practical problems. A selected bibliography closes the monograph.

The translation is offered with the conviction that it will meet a very general demand on the part of the teacher of educational psychology and of the hygiene of instruction for a clear and systematic presentation of the problem of mental fatigue and its relation to school work.

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Relative Efficiency of Phonetic Alpha- bets

An Experimental Investigation of the Comparative Merits of the Webster Key Alphabet and the Proposed Key Alphabet Submitted to the National Education Association.

By

**GUY
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This monograph will exert a two-fold appeal to those who aim to keep abreast of present-day movements in education. First, in that it offers an excellent example of the application of the experimental method to a pedagogical problem, and in this respect will take its place as a contribution to experimental pedagogy; secondly, in that it deals with an important topic just now a matter of general discussion in educational circles.

The National Education Association has under consideration the adoption of a new key-alphabet for phonetic notation. The merits of the proposed alphabet have been the subject of extensive and lively debate, but no one has hitherto done the obvious thing and tried out the new alphabet under experimental conditions. This Dr. Whipple has accomplished, and the results will interest every teacher who uses a phonetic alphabet in his class work as well as every educator who believes with the author that, in the school as well as in other realms of life, "you can tell by trying."

In view of the fact that the subject of phonetic alphabets will be given much attention by educators during the next year, this work is offered at a price which will place it easily in reach of teachers in city and rural schools, and also the members of clubs and reading circles.

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Back- ward and Feeble- Minded Children

**A Series of
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**By
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Each of the more populous States has several thousand mental defectives, large numbers of whom are attending the public schools. They usually make little progress and are distressingly disturbing factors in the regular classes. In Germany, and recently in France, and in some of our own cities, these children are being placed in special classes or in special schools, according to the degree of defect. Teachers and school experience immediate relief, and the children themselves are the greatest beneficiaries. All the schools have these defectives, and the problem of recognizing and caring for them is an immediately pressing one in all our cities, towns and rural districts.

Following a year in the clinics of Paris, Dr. Huey's position at Lincoln for nearly a year and a half involved making a mental examination of each new admission to this, one of the largest state institutions for the feeble-minded.

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The methods of making examinations and tests and of making observations and gathering data needed for the interpretation of any given case are illustrated in detail. The concreteness of the material and the abundance of illustrative examples will be appreciated by all, and make the studies intelligible even to those unfamiliar with psychological technique.

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Experimental Studies of Mental Defectives

**A Critique of
the Binet-
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and a Contri-
bution to the
Psychology
of Epilepsy.**

By

**J. E.
WALLACE
WALLIN,
Ph.D.**

**About
150 pages.
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The Binet-Simon tests have been hailed by popular writers and even by some scientific workers as a wonderful mental X-ray machine, which will enable us to dissect the mental and moral mechanisms of any normal or abnormal individual. But those who have had extensive experience with these tests know that, despite their very great practical value, they have numerous imperfections and definite limitations. These imperfections and limitations can be made known only by thoroughgoing trial on large groups of individuals by expert investigators. Dr. Wallin is well qualified by training and experience to undertake this work, and he has presented in this, the seventh of the series of Educational Psychology Monographs, a systematic critical study of the results of the Binet Scale when applied to a colony of epileptic children, and has included a guide for the conduct of the tests.

In the course of his study certain facts have been revealed concerning the mental status of the epileptic which should interest the schoolman as well as the alienist and the physician, for epileptic children constitute a numerous class which grades nearer the public school laggard than do feeble-minded children, and which cannot be reached by the cut-and-dried methods of the schools, but requires a special educational regime. Moreover, epilepsy, despite the investigations of many alienists, still remains a little understood pathological condition with marked disturbance of mentality.

We commend this contribution to the attention of physicians, alienists and all schoolmen who are interested in the scientific examination of mental deficiency.

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Variations in the Grades of High-School Pupils

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**CLARENCE
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Ten years ago no serious attempt had been made to study scientifically the relative merits of various systems of grading students, despite the fact that statistical methods for undertaking such studies were fully available and that grading plays so large a rôle in the school career of hundreds of thousands of school children. In the last five years, however, this inviting field has been the scene of numerous important investigations, so that we have at least arrived at a better understanding of the nature of the problem and of the general line along which progress must be made.

In the present monograph Mr. Gray reports the methods and results of his investigation of one phase of the general problem, viz., the nature, degree and causes of the variations occurring in the grades of high-school pupils. The general aim of his study is to base an educational investigation upon school grades. It is usually argued that such marks are inaccurate, that they are complex, that they are not scientific, and, above all, that it is impossible to measure mental traits by such cold statistics as grades afford. In direct contrast to these arguments stands the fact that all promotions from the kindergarten through the university are based upon this so-called inaccurate, complex, unscientific and cold estimates of progress and achievement. One of the most vital and fundamental principles of any school system is its plan of promotions, and because of the close relation between promotions and grades there is the most urgent need that schoolmen become interested in the problems of grading. *Variations in the Grades of High-School Pupils* should interest all teachers, and more particularly all school administrators, because the author not only shows clearly how unreliable are the grades commonly given by teachers, and makes evident the need of instruction and training in grading, but also presents a relatively simple method by means of which any high-school principal can study the condition of the grading in his own school and take due steps to remedy the faults that he may find.

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